ADVANCED MANAGEMENT

JULY 1955
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In This Issue . . .

Financial Incentives: The Flywheel Of Management Planning
Phil Carroll

Personal Factors In Good Salesmanship
Frank E. Fehlman

Maximum Product Value At Minimum Cost
C. Willard Bryant

Retooling For Materials Handling
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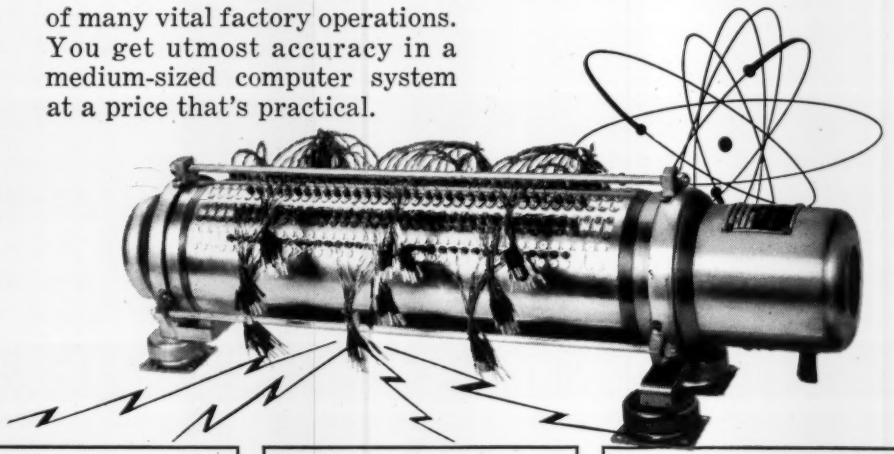

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"Through research, discussion, publication, and other appropriate means to conduct and promote scientific study of the principles governing organized effort in industrial and economic life . . . for the general betterment of society . . ."

SAM Constitution

CONTENTS

Editorial—Is The Cold War Ending? 4
by F. F. Bradshaw

Financial Incentives: The Flywheel Of Management Planning 5
by Phil Carroll

Personal Factors In Good Salesmanship 8
by Frank E. Fehlman

Maximum Product Value At Minimum Cost 14
by C. Willard Bryant

Retooling For Materials Handling 17
by James R. Bright

When Business Management Becomes A Profession 22
by Mary Parker Follett

Colonel Urwick Accepts Wallace Clark Award 27
(The Colonel's Acceptance Speech.)

Automation Dictionary 30
by C. L. Peterson

New Management Writing 34

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Is The Cold War Ending?

Smith vs. Marx

AS THIS goes to press the headlines tell of Russian smiles and wiles. The average reader wonders what's ahead of us — world peace or a Pearl Harbor?

From where we sit it looks as if we are having at least a partial victory in the cold war; if so, the credit goes to our economic muscle. Russia seems short of production. Their goods produced are not enough to back up their government policy.

On the other hand, the Free World's production is soaring to new highs. The American Science of Management is working. Without any lazy pride we can still afford to recognize the strengths of our system.

The Philadelphia Convention said, in effect, in 1789: let national problems be settled nationally, local problems locally, and individual problems individually. That was the beginning of what *Fortune* called the "Permanent Revolution" — the fine balance between planned coordination and free enterprise. The American Way is the name of the future; Bolshevism and collectivism are reactionary efforts to turn the clock back.

Scientific management's key concepts today emphasize Automation, Negotiation, Social Responsibility, Decentralization, Competitive Marketing, Product Improvement, Operations Research, and Management Development. These are the key concepts of the S.A.M.

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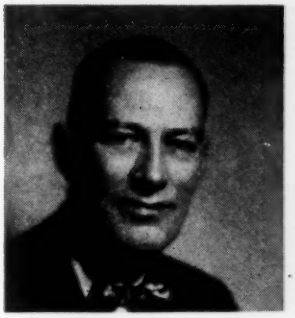
F. F. BRADSHAW
President

PHIL CARROLL graduated as an electrical engineer from the University of Michigan, served in the Army Signal Corps during World War I, entered Westinghouse Company as a student engineer and worked in three of their plants in Timestudy. He became a founder of Dyer Engineers, Inc., of Cleveland, later established his own practice as a Professional Engineer. He is a member of ASME and S.A.M., Northern New Jersey Chapter. Mr. Carroll has lectured at various universities and is the author of Timestudy For Cost Control, Timestudy Fundamentals For Foremen, How To Chart Timestudy Data *and* How To Control Production Costs.



Financial Incentives: The Flywheel Of Management Planning

By Phil Carroll
Professional Engineer
Maplewood, N. J.

THE BIG JOB of any manager is to look ahead. I call it "crystal ball gazing". Some folks prefer the term "management planning."

Correct planning is vital to our progress if we look at it as Alexander Heron does in his book *No Sale, No Job* (Harper & Brothers, 1954). He makes some arresting comments. In one place Heron says, "The employer acts as the agent in the task of selling the worker's work for the customer's dollars." In another he says, "The basic task is to sell the work of every person who can contribute to the needs of consumers."

He does not say that the employer is the agent who sells products. He makes no mention of toothpaste, automobiles or radios. He omits all references to materials, chemicals and drugs. He says to *sell work*. This I call "conversion."

Conversion is the application of our organizations skills. The skills are applied by our overhead people and our producers. And our conversion costs are overhead plus direct. I consider these as rental charges for the time required to make the conversion.

The problem of management planning is to decide today what is to happen tomorrow. In its simplet aspects, we have delivery promises to make and cost standards to meet.

The questions to be decided regarding what new methods shall be installed and what new equipment shall be bought are in the near future. Still further in the future are the decisions to be made with respect to new sales territories to be opened up and the new products to be developed. And I find in executive development literature the important comment that today's decisions will aid or hamper tomorrow's managers.

Management planning can be divided into two groups, as I look at the whole problem. It is divided into two parts — financial and non-financial. Applied to planning, non-financial might include that done by the non-profit organizations. Managers of these efforts are supposed to operate within their budgets. They must control their costs or try to get their budgets increased.

Managers of our typical organizations are supposed to make profit. We say, "We must meet or beat competition." Our function is to perform services at a profit.

We must make profits in order to pay our taxes, and to provide "seed money" for tomorrow. We must keep up-to-date and expand. To do so means that we must raise prices to cover costs or reduce costs to leave some profit.

Of the two approaches, I believe that we get further by reducing costs. I like to think of Henry Ford's ideal. It was to "make a car for the multitude." That's the attitude that gave us the highest standard of living in the world.

Either way, it seems to me that there are two main factors in planning. One is time — how long will it take? The other is cost—what will it cost? Under some circumstances, time is the chief factor. During the war, "money was no object." Costs were completely disregarded. We needed to be there "firstest with the mostest."

Again, timing is important in meeting some market conditions. There are the seasonal variations where, for example, we must make furnaces in time for winter. On the other hand, we must make fans in preparation for the hot weather of summer. Or perhaps our problem is one of styling. We may have to get out new products or new designs in order to meet competition.

* *Given as a talk before the Philadelphia Chamber of Commerce, April 6. 1955.*

Time or timing comes first in many cases. Often our chief concern is that of prompt delivery to the customer. He wants what he wants when he wants it. In competition, when the price tag is consistent, delivery often becomes the deciding factor in making a sale.

A Foundation For Time Planning

Frequently, we see costs disregarded to meet some time schedule. I see many examples where we send out products by air express or personally escort them in pullman cars or taxi cabs. Again, we see lots of money spent in expediting production.

Some is caused by lack of planning. I put it this way: "We don't miss the train because we can't run fast enough. We miss it because we don't start soon enough." On the other hand, perhaps the failure to deliver was due to over optimism. Or perhaps it was due to the lack of knowledge of how long it does take to turn out production. Of course, it may have been caused by a lack of interest in meeting the time schedule.

So my first question is, "What foundation do we have for time planning?" As I look at the problem, we have two choices—past experience or time standards.

Past experience times can vary greatly. There are two reasons, as I analyze conditions. The first is that people do not know what the time should be. As a result, they work to their own standards. The second is that actual time changes with (a) how we feel at the moment and (b) with interferences that occur in the production of work.

We have all kinds of interferences and irregularities in every plant. Most of these I call "management errors." These I divided into three types. They are:

1. Failure to plan
2. Failure to specify
3. Failure to follow-up.

We have these "management errors" with measured and unmeasured time.

But there are several differences between past experiences actual times and standard times. One is that you have to do a job before you can have an experience time. Therefore, you have no way to plan the time of a new operation. Second, you cannot tell a customer or an employee what the time should be for a new operations. Thirdly, there are the irregularities that throw off our time guesses.

You know how it is in your own case. You set out to do something in an hour. Then a five minute phone call interrupts your train of thought. As a result, you are thrown off stride or perhaps your attitude changes and it takes you two hours to do that job.

So, to plan time you need some kind of work standards. You need a common denominator that measures output. You need to know how long it should take and you must tell the employee what that time is. With good timestudy data, you can predict how long it should take. You can set standards for new work.

Also, with good timestudy data you can set standards to cover irregularities in operations. Measuring these management errors seems very important to me. There are several reasons. The first is to control the time that is taken to turn out production. The second is to know what the management errors are and how much they cost. The third is to work to reduce and control these time losses and their costs.

In my experience, the reduction of management errors is the large part of labor cost reduction. When I say labor, I mean both overhead and so-called direct. I find more time losses in overhead labor than in the direct operations. The main reason, as I see it, is that we have not studied the overhead operations.

Incentives That Help Reduce Time And Cost

Next is the question of interest that people have in meeting whatever time standards are set. In this I'm just as concerned about the time taken by the engineer and the order clerk as that taken by the lathe hand.

What incentive do we have to induce people to meet the time? We have many types of incentive in industry. These we might list as:

a. Morale, pride and a chance for promotion
b. Fear of discipline or losing one's job
c. Profit sharing or a year-end bonus
d. Wage incentives, as we call them.

All incentives help to reduce the time and the cost. In addition, I think that we do have many types of incentives in most plants. But I believe that individual wage incentives gives us the best results. You might think of piece work—money "rates." I think of so much time per piece with incentives set up to reduce the time taken. In general, individual incentives give us the best time control. Also, they give us the lowest cost considering the method in use.

Here is where we get the "flywheel of management planning." It results from two factors, as I analyze the aspects. One is that we have the time set for the work to be done. Second is that we have an incentive to beat that time.

And I'd like to add a third factor—the wife. I say, "An incentive plan is a success only after we get the wife accustomed to living at the higher standard."

Time Planning And Cost Planning

You and I need a certain income after we get used to having it. So do most people. And when this need is based upon any kind of time schedules, we meet those schedules.

Thus, with standard time set up for work to be done, we meet the time. We have a consistency in the rate of output. From that grows many benefits.

Primarily, you have a reliable base for time planning. Time is what most of us think of when we use the term 'planning.' But also we gain cost planning. Take an example: Suppose you have an hour set as a time standard for an operation; with a one-for-one incentive plan, your cost is also one hour, provided standards are met or bettered. And your incentive plan is not a success unless they are.

With regular incentive earnings, your labor costs are constant. They are predictable. To my way of thinking, the ability to predict costs is a vital tool in management planning. Think of all the quotations we must make on the special orders we build in industry. Consider all of the quotations that are made in the job shop operations. Go a step further. What about the costs of new products we plan to make, and all of the improvements in costs we hope to get from better methods?

Then there is another side to costs that we should remember. Suppose we plan to utilize a new method or a new machine in order to improve costs. We plan on certain savings to pay for the investment made in the improvements. Do we get those savings?

With standards and incentives, you have some insurance. You have the flywheel effect of the man's interest. He has a financial stake in making your

plans come true. This is the flywheel in management planning.

Then, as a rule, your productivity is higher with financial incentives. That brings down your overhead cost per unit, provided you can sell the increased output.

So you can plan better for new equipment and the new plant you may be thinking of building. And your inventory can be reduced. Your turnover of inventory can be greater. Your process cycle can be shortened. Therefore, the problems of capital planning can be eased considerably.

And there is another factor I consider important. I refer to the management errors mentioned earlier. These are the irregularities we have in every plant. These make costs higher than they need be. These irregularities throw monkey wrenches into our management planning.

Facts About Planning And Cost Reduction

They occur every day but do we know about them? We do if we have sound time standards and wage incentives. Sound standards do not include these management errors. Therefore, we must allow for them as they occur. Consequently, we learn a number of facts that are useful in management planning and cost reduction. These are:

1. We know where the management errors are
2. We know how much they cost in time or money
3. We can find out what causes the trouble
4. We can work on the causes and thus bring down the costs.

As we do better jobs in reducing these errors we get lower costs and still more reliable planning.

All I'm talking about is getting more facts. And along with these, providing incentives for people to act on these facts. I'm not talking about systems. Systems are lifeless. *People* spend the money or time. Only people can save time or money.

So I think what we need are better time-costs facts and people interested in using them. That's why I like financial incentives and time standards.

When these are used in management planning, you have the flywheel effect of reliability and consistency. Your crystal-ball gazing comes true more often. More of your plans work out as planned. END

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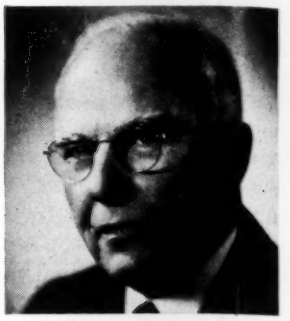
FRANK E. FEHLMAN has been sales and advertising counsel to 42 newspapers, 22 national advertisers and 27 banks. A founder of the New York Sales Managers Club and a past president of the New York Advertising Club, he is author of numerous books on marketing and sales training, including How to Write Advertising Copy that Sells.



Personal Factors In Good Salesmanship

By Frank E. Fehlman
Advertising Counselor
Distribution Appraiser
New York City

Some refreshing insights on the attributes of the successful salesman are presented in this discussion. The material has been adapted from a section of the author's volume, "Anyone Can Sell," which was selected by the "Library Journal" and the Cleveland, Ohio Public Library as one of the best business books of 1954-5.

All of us in the world of selling are inclined to forget the simple things that have to do with closing a sale. We push along, not very alert, and awaken to find ourselves out on the street corner without an order. We are apt to be too sure of ourselves, too cocky, and many of us act like the aggressive Bismark type when we should be acting like the analytical Ben Franklin type.

With the Apostle Paul, we have little choice but to be "all things to all men." We are dealing with the whole gamut of human personality when we sell. We must adjust our personality to offset the sales-resistance of our prospect. We don't have to join his lodge, church or association. We don't have to dress like him or drive his kind of car. Our job is to make him like us and like our product. He must feel that he has made a good trade with an honest person when he signs the order or hands us the cash. This is difficult to do if we add to his sales-resistance by throwing up barriers between his personality and ours.

Unless we cultivate some of the good things found in the Bismark type—his drive, self-assurance, boldness, initiative—nothing very much worthwhile is going to happen to our pay checks.

Unless we develop an interest in careful analysis of every proposition we face, and routinely use the Ben Franklin type of pro-and-con thinking in preparation for the buyer who may be a Ben Franklin type of person, we will never reach the five-figure bracket of income.

Unless we root out of our makeup the weaknesses of such types of salesmen as the Weathervane whose thin skin and fear of criticism make him veer with the wind; or the Flipped Coin type who bases his reasoning on hunches; or the Woman's Intuition type whose oversheltered childhood has resulted in adulthood fear of decision-making without help or endorsement from mother or wife;—unless we can rid ourselves of these weaknesses our sales efforts will fail sooner or later.

And if you have never sold anything, be assured that you can learn to sell; and that within a year you can learn to use your personality to best advantage in any sales situation. As a successful salesman you may not make a million dollars, but you can be independent the remaining years of your life. Top salesmen are always at a premium. There have never been enough good ones to go around. If you can sell, you can write your own ticket and you can live anywhere in this country. *Only salesmen are really independent.* Start thinking and acting like the Ben Franklin type today. Then take on the power of the Bismark type.

A skilled carpenter relies on a few important tools. Give him a pencil, a saw, a hammer, a square, a leveling device, a six-foot rule, and he has the essentials for building a house.

Consider the following subjects as "sales tools"—aids in more quickly attaining what you want: increased earnings and independence.

1. *Health—your greatest asset:* Other things being equal, the salesman with good health invariably earns more money than the salesman with mediocre health. You don't have to be able to vault fifteen feet, or shoot in the low eighties at golf, or run one hundred yards in ten seconds to be a good salesman. However, if you cannot put in an eight or twelve-hour day, your chances of earning $10,000 or more a year are slim, to say the least.

You would be astounded if you saw,

Adapted from Anyone Can Sell *by Frank E. Fehlman; Printers' Ink Publishing Co., Inc., Pleasantville, N. Y.*: 1955.

as I did, the health records of four hundred-ten salesmen who applied for a sales position during 1946 and 1947. These men, after satisfactory performance on intensive psychological tests, were required to submit to a complete medical examination. Imagine the shock of five of these candidates when they were told they were diabetic! Many others had not known they had small ruptures. Three couldn't believe that small spots had already appeared on their lungs. Twenty-five per cent had defective arches. Altogether, forty-two candidates were eliminated. Although each had done well on the psychological testing, the sales manager was not willing to gamble on poor health.

A List Of Favorite Alibis

The cheapest insurance in the world is a complete physical check-up at least once a year. The day or week you don't snap back quickly, that's the time to visit a good doctor or clinic and see what's wrong. Don't discuss this move with your employer. Do your own thinking. Unless you have health, all the other abilities you may possess for the hectic work of selling won't be worth very much to you.

2. *Resisting alibis:* With the single exception of the Ben Franklin salesman, all the types mentioned earlier—Bismarks, Weathervanes, Flipped Coin and Woman's Intuition — use one or, at times, all of the sixteen alibis that are now examined from the viewpoint of more than fifty top sales managers who helped me make up the list. Many things contribute to our success in the world of selling, but nothing seems more important than willingness to face the facts of our failures and determination to eliminate for all time the use of an alibi when we fail to get an order.

Here are the sixteen most frequently heard alibis, with observations on each:

(a) "My greatest handicap is that I was born last in a family of four children. My two brothers went to college, so did my sister, but my dad went broke about the time I finished school."

There are dozens of fine correspondence schools in this country and hundreds of classes for adults in our high schools and in both large and small colleges. If missing college was all that kept this individual back, we can have no sympathy for his viewpoint. He can study almost anything right in his own bedroom or living room.

(b) "My eyesight has been against me."

This is not at all an infrequent alibi. Tens of thousands of young men are turned down by military physicians because of defective vision. However, in practically all instances, proper glasses can be fitted for occupational needs. There is little excuse for this alibi.

(c) "My trouble is, I've never been willing to sit still and let some loud-mouthed sales manager bawl me out before other men who were not half as smart as I."

Every day hundreds, possibly thousands of salesmen are told by some superior to do this or that, and the telling is done before others. I cannot subscribe to reprimanding anyone in public, and I have never done so. On the other hand, an explanation or a suggestion can easily be mistaken for a reprimand when it is addressed to a sensitive person. More salesmen fail to win top salaries because of the weakness of hypersensitivity than for any other cause. As a class we are egotistical, self-conscious, proud, bull-headed, arrogant and domineering. These traits, with adequate self-discipline, are part of our necessary equipment. We must be prudent enough to control them when someone levels criticism at our performance or sales record. Don't be thin-skinned. I cannot overemphasize this point.

(d) "The day I hit $5,000, after six years of marriage, my wife started to needle me because I wasn't earning $7,500 like two of the other men on the sales force."

This is a common complaint by many salesmen. It has some foundation. Women have a way of talking with each other. When they finally learn that their mates are not earning as much as some other salesman in the same organization, the haranguing process sometimes begins and discouragement infects the husband. I have seen dozens of men fail because they were not able to straighten out the distorted ideas of their wives. Here again you, and only you, can cure this situation. No outsider is going to talk to your wife about her loose criticisms of your work.

"Some guys play up to the boss . . ."

(e) "Some people say I am touchy. Well, nobody is going to tell me off: customer, boss, or anybody."

This you can put down as almost one-hundred per cent true: The larger the salary earned by an individual, the greater the ridicule, abuse, criticism and sarcasm he is able to take. What difference does it make if a prospect, or your own boss, starts to bellow like a bull and heaps you high with abuse? Take it. Smile. You don't have anything to do but keep cool and stick until you get the order, or until your boss quiets down. If you are in the right, the other party will usually admit his error in due time. If it's a customer, don't walk out in a huff. You lose both the sale and his good will. Think of your future when you're tempted to blow up.

Wives, Luck And Politics

(f) "Some guys play up to the boss. One guy is always having him over to dinner. My home life is my own and I don't want ever to clutter up my family with bosses after working hours."

Many a fine relationship has been blown into high heaven because some salesman thought it a good idea to invite the boss over to dinner. This is one of the quickest ways to have your wife upset the apple cart. She may take a violent dislike to your employer. He may also wonder why you ever picked that woman. If, on the other hand, the boss invites you to dinner, go; but keep the conversation judicious. Let the boss and his wife do most of the talking. He may be looking you over for a promotion or he may have something else of importance to discuss with you. And you can be sure that his wife is going to have something to say about you after you have gone.

(g) "I have had one streak of bad luck for three years. Some fellows are lucky. I guess I was born under an unlucky star."

By the time you have been selling for

five years or more, you should be able to trace over seventy-five per cent of all your business to friends, satisfied customers. It's well to get this fact absolutely straight in your mind, because many salesmen fail through not having tried hard to build up a backlog of friends and satisfied customers. You *make* your luck in the world of selling. Never again talk about good or bad luck. It's a waste of time and energy. If some prospective employer learns that you believe luck is behind your success, you may be sure he won't invite you in for a talk about a promotion to greater responsibility.

(h) "Every place I have worked was shot through with politics. I am a salesman, not a politician. That's why I've never made what I deserve."

Anyone who can sell, and who has kept a record of his sales and earnings, never has to worry about the politics of a sales organization. Ability, talent, honesty, hard work, and loyalty bring their own rewards in any venture. True, you will find politics in every business. You will find people who believe that tale-telling, and fawning on the top brass, will get them an advancement. In the last analysis, however, it is invariably proved that these people have been leaning on a very weak reed. If your sales are mounting every year, if you can sell the tough buyers, you don't have to worry about inside politics.

Religion, Travel And Letters From The Sales Manager

(i) "When I get excited I stutter a little. It burns me up to have someone kid me about this defect."

During the past twenty-five years, psychologists, public-speaking teachers and gradeschool teachers have developed exercises which, followed religiously, will tend to eliminate or greatly reduce stuttering. A "blood-relation" to stuttering is the jumbling of words, a difficulty which almost always stems back to confused thinking. Memorize your sales talk, then talk slowly. Through self-discipline, this difficulty can be overcome in a few months.

(j) "I refuse to fill out long reports. What do sales managers want—a lot of written stuff, or orders?"

Why must management always have complete records of the progress of its sales people? There are dozens of reasons why this information must be gathered weekly, sometimes daily. The most important reason is the fact that, on a new or highly competitive item, the salesmanager must be able constantly to keep his finger on the pulse of market acceptance. This knowledge in turn will form the basis of correct decisions on warehousing, product design, advertising, and the like. Sales reports are very often the axle on which the wheels of a corporation turn. From the viewpoint of the individual salesman, the daily report is an excellent compass for his own planning.

Swindle Sheets And Promotions

(k) "Unless you are of a certain religious faith, many sales managers turn you down, regardless of your record."

When it comes to selling a washing machine, or a suit, or a box of soap, your religious belief is of no consequence, except that most of us believe any religion is good for us. People who believe in a religion usually are honest, more kindly, more likely to be fair and to do a good day's work. Certainly, favoritism in this matter is not in the American tradition. On the other hand, in this as well as other matters, we must not let alibi substitute for fact.

(l) "Every time I start out on a week's trip from home, my wife and I have a family battle. Sometimes it requires two days for me to get back into my selling stride."

This alibi has some substance, some very real grounds for not doing a good day's work. If you have decided to try to move up to the $10,000 annual income-bracket, it follows you will be compelled to spend many days and evenings away from your home. But, face the facts. If you are sure you can sell, and an opportunity arises, one where you will be compelled to be away from home often or occasionally, take a little time and sell your wife on the importance of your work. After all, you are working for her and the children.

(m) "Boy, do I burn up when I get letters telling me that I don't follow instructions! These letters are usually written by some third assistant to the sales manager."

Why the constant flow of detailed instructions? Because many of the men on the sales force are like you: They also detest detailed instructions and reminders. What your sales manager is trying to do, however, is help you kill off competition and help you earn more money. Welcome these instructions, reminders, criticisms. They may save you many an order. It is possible that they may some day help you to be a successful sales manager in your own right.

(n) "Every time I turn in an expense account for entertainment, I am criticized. Yet, the sales manager buys plenty of food and drinks for out-of-town customers when they visit the plant."

Here is a quick report on two men. One earned $10,000, the other $8,500. The former handled five accounts in the agency. If you walked into our office any day at 8:15 A.M.—the office officially opened at 9:00 A.M.—you found this man in his shirt sleeves lining up his work for the day. In the three years that I directed his work, his entertainment bill was always less than $25.00 a month. The lower-salaried man was always late with an air-tight alibi. He honestly believed, moreover, that heavy entertainment brought contracts. His monthly bill ran from $125.00 to $200.00. We finally told him we were raising his salary to $10,000 and that he had six months to get more business or he was through. In four months he captured a new account worth $300,000.00. Today he is head of a five-million dollars business; and does he check the expense accounts of his army of salesmen! In effect, if there must be a celebration, have it after the order, not before.

Letters That Sell And Promote Good Will

(o) "It took me a long time to learn how to handle a 'swindle sheet' (expense account), but I finally caught on. I make about $6.00 a week on mine."

The 'swindle sheet' operation costs the company money. Your employer can afford a little of this thievery; but you can't. The cumulative effects are psychological as well as monetary. The salesman who spends time each day figuring out how to pad an expense account is digging his own grave so deep that once he falls in, he is through. It's far better to spend $5.00 or $10.00 of your own than ever to have any employer even suspect that you are not one-hundred per cent honest.

(7) *"When it comes time to give someone a promotion, why do they always select some stupid fellow at the plant who has a pull or is a relative of some boss?* Pull often gets someone a job. Pull has never held a sales job. Results are what count. Just as surely as the sun rises and sets, the only true way to obtain a lasting promotion is to prove with your own records that you can outsell the other fellow.

At What Age Do Salesmen Do Their Best Work?

Until 1941, when the Japs started shooting, most sales managers and owners of stores and manufacturing plants put a ceiling on the age of salesmen to be hired. As the young men went into the services, older men came out of retirement and, even today, with discussion of universal military training, we see many men in their fifties and sixties actively engaged in selling everything from shoes to boats, from canned food to automobiles.

Other things being equal, this statement will stand when applied to any selling situation: With good health, no intemperate drinking, you can, *at any age*, win more friends and more orders. Age should be an asset, not a handicap, in any field of selling.

You may be forty-five years old by the calendar; but when you call on a prospect who is in his twenties or early thirties, *you have got to seem to him to be about fifteen years younger.*

This is easier said than done. But it is being done by insurance underwriters, bankers, clothing salesmen, butchers, and outboard motor salesmen.

A typical example. I have known a certain insurance underwriter for thirty-two years. Now in his early sixties, he welcomes an interview with young men. He has the same "song and dance" approach. During the past thirty years he has become one of the best informed baseball men in the world. He can tell you the percentages of hitters, running back to the Black Sox scandal that shook the baseball world in 1919.

What's the secret of his success? Very simple. He has learned, through trial and error, that no one can predit the amount of insurance a man will buy at age forty-five. My friend catches you when you are young, around twenty-five, just married, and he follows your advancement, year after year. And he never lets your birthday pass unnoticed.

Salesmen under thirty-five have little to worry about when age is being discussed. But the day you pass forty, fifty, then sixty, *you must readjust and rejuvenate* your thinking. You must think as men and women think who may be twenty years your junior. That's all there is to it. You have the experience, the knowledge of your line, a list of satisfied customers, and money in the bank. All that you may lack is the ability to wipe ten to twenty years off the calendar, and to think and act like those who are younger than you.

This does not mean that you have to join their bowling club, or try to beat them at golf, or carry a boat on a portage in Canada. It does mean that *you must make it easy for the younger man or woman to forget your age quickly.*

A smile, words of encouragement, of advice, the willingness to listen to younger men and women who have not had your experience will pay handsomely as the years pass. Some of these people will move up fast as buyers, executives, etc. Win them on the way up, and you have future customers who will stay with you, who will also give their nod of approval when others want to know about your integrity and ability.

"Anyone Can Sell," and anyone at any age can sell. If, at sixty, you are debating whether you should "take a flier" at selling men's shirts, or greeting cards from door to door, stop wondering. Get some samples and try your hand. Others have succeeded, some with far less talent and educational background than you.

Does Your Vocabulary Affect Your Earnings?

Have you ever read carefully every word in one of your life-insurance policies? My friends in the insurance business tell me that not one person in a thousand ever reads and understands just what his policy promises. Who writes these policies? Who approves them to be offered to the public?

The original draft of any policy goes through many hands before it is finally filed with the State Board of Insurance. Often the latter will ask for a clarification of some paragraphs in the policy.

Now, in spite of all the precautions taken by the insurance company and the State Board, many heirs of policies of deceased persons appear in court and demand additional compensation before they accept the final payments. And often the insurance company will enter the court and refuse to pay because the policy-holder had not fulfilled his part of the contract. Hence, language and fact very often require court arbitration.

If the insurance companies, with the highest paid lawyers and actuaries, occasionally encounter trouble with precise language, should not you and I, who are trying to obtain an order, carefully check our own statements and improve our use of words so that we can give to prospects all the facts in easily understood language?

Letters—And Irritated Wives

A simple aid to increasing your vocabulary is to sit down two or three times a week and write a personal letter to some prospect you've already called on. This I can assure you: Everyone likes to receive a personal letter. It can be in longhand or it can be typewritten. If each week you send a personal letter to each of three prospects you have not sold, and if you keep up this schedule for a year, you will have written one hundred fifty-six personal letters. From this effort you can rely on about ten per cent return in the form of orders.

Another very important point: Never throw away a soliciting letter until you have read it carefully. Some of these letters are written by very skilled copy writers, men and women who make a comfortable living with the written word. You can learn much from reading their letters to you.

Why do so many salesmen wind up in a divorce court? My guess (and it's only a guess; but it is backed with many case histories) is this: Salesmen usually dress better than clerks, bookkeepers, engineers, machinists, etc. They tend to be extroverts, show-offs, ostensibly sure of themselves, and ready with the quips when they meet any woman, young or old. They like to feel that they are preferred when they go to a party or meet people at a convention. Of course, it does not follow that their wives like, condone or sympathize with such behavior, especially when they observe the husband showing off in a group. Add to these negatives the fact that many sales jobs call for out-of-town trips, sales meetings in the evening, or visiting prospects who cannot be seen during the day. The end result may very well be an extremely irritated wife.

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CONTENTS

Definition Of Guaranteed Annual Wage
C. Wilson Randle, Dir. of Research, Booz, Allen & Hamilton, New York City

Unemployment Compensation And Wage Guarantees
Richard C. Brockway, Exec. Dir., Div. of Employment, N. Y. Labor Dept.

Impact Of Current C.I.O. Version Of GAW On Unemployment Compensation
Stanley Rector, Legislative Dir., Unemployment Benefits Advisors, Inc., Washington, D. C.

Company Planning For Employment Stabilization
Arthur Felton, Consultant, Bruce Payne Assoc., Inc., N.Y.C.

Will The GAW Stabilize Employment?
Millard C. Faught, Business Economist, New York City

Employment Stabilization And The GAW
David Lasser, Research Dir., IUE-CIO, Washington, D. C.

What Does The Guaranteed Annual Wage Mean To The Average Business?
Frank Rising, Gen. Mgr. Automotive Parts Mfgrs. Assn., Detroit

Company Experience With Guarantee Of Work or Wages
Wm. E. Schlender, Dept. of Bus. Organization, Ohio State University

Economic Implications Of The Guaranteed Annual Wage
Prof. Jules Backman, N. Y. University School of Commerce

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Recently, a national magazine released articles about the "woman problems" in large corporations. Some of companies that contributed to the article said, in effect, "We want nothing to do with the wives of our executives." Others took the opposite stand. The latter companies had excellent programs whereby the wives of senior and junior executives had regular opportunity to meet each other socially, to become acquainted with the people and programs of the company, and to gain deeper appreciation of the importance of their husbands' activities in advancing the competitive objectives of the company. The latter framework has excellent merit. It is also a useful object lesson for companies having a traveling sales force.

If you are a sales manager, be wholesomely concerned with the marital harmony of the men working under you.

Not all salesmen are "flirts." Successful salesmen of this cast are in a very tiny minority and their success is rarely permanent.

If the job calls you away from home frequently, or for extended stays, there are means of planning for interesting and constructive activities that will reduce loneliness or boredom in the home. The Red Cross welcomes part-time help from women in the community. The local hospital is nearly always in need of auxiliary services from women having a few hours to spare. There are numerous other activities of high character. All of these can contribute to the domestic harmony so necessary in the hard work of selling.

Are You Versatile?

Is it easy for you to adapt yourself quickly to others? Does it upset you to switch from one line of thinking to another without too much transition? Do you feel that others must agree with your politics or religion before you can like them? Do you argue about trivial things?

If you have decided to start working toward a goal of at least $10,000 a year, then you must, from this moment on, make yourself pliable, receptive, cautious, studious, and willing to adapt yourself to any one of the 164,000,000 people in this country you expect to sell.

Remember, the word *versatility* means the ability to do many things well. To do them *well;* not necessarily perfectly.

No two persons are the same. But, in

one respect, salesmen are as alike as two peas in a pod. The ones who move up to the five-figure bracket—$10,000 or more—are versatile. They know how to do many things well; and the "many things" can be reduced to just one thing: ability to adapt quickly to *anyone* regardless of age, race, creed, color or nationality.

How Important Is A Diploma?

This question: "Does the completion of a four-year course at some college help the average individual to move more quickly up to the high income-bracket of selling?" cannot be answered with a flat yes or no.

This we do know. The most successful insurance underwriters today, the men who sell from $500,000 to $1,500,000 of insurance each year, are usually college graduates who have a flair for statistics.

The men who sell electric power equipment are usually graduate engineers. The men who sell the plans developed by architects are usually college men. Many of the men who sell cash registers and elaborate office and store equipment, such as accounting and tabulating machines, are also college graduates.

But, when you move into the army of more than one million men and women who collectively help sell over one-hundred billion dollars worth of merchandise each year, you find that only a very small percentage are college graduates.

Selling anything, from shoestrings on the corner to an airplane contract, is a rough-and-tumble business. One reason so many men and women with college education fail in the world of selling is that they lived, from birth to graduation, a sheltered, protected existence, free from worry, debts, harrassments and concern about money.

This has happened more than once. Toss the college graduate into a group of high-pressure food salesmen who make from eighty to one hundred-ten calls each week on busy grocers. What happens? At first he laughs at the turn-downs, the caustic jokes, the criticisms of the sales manager. As weeks pass, and he fails to keep up with the sales records of his associates—some of whom may have had but eight years of elementary schooling—he starts to worry, may develop a "sour-grapes" attitude, finally may say, "To heck with selling."

I have met hundreds of college graduates who tried to sell and failed. Without exception, these men did not have the tough, arrogant, egotistical attitude of the Bismark type, coupled with adroit adaptability to the personalities of their customers.

On the other hand, the college graduate can (and many do) make his educational background a tremendous asset to his sales career. Here are a few of the potentials assets of college background for the future salesman: (1) Contacts are made in college with dozens, sometimes hundreds of young men and women who in later years may become customers. Other things being equal, the college graduate will tend to give his salesman fellow-alumnus the order. (2) Life in any college tends to broaden the horizon of any boy or girl who may have spent the earlier years entirely in a small community. (3) The knowledge and serious attitudes developed in college very often are extremely useful in increasing one's salesmanship capacity. In many areas, selling is becoming a highly specialized venture. For example, the underwriters of large insurance companies, men who earn from $25,000 to $100,000 a year, no longer depend solely on their persuasiveness as salesman. They study tax laws, accounting, trust agreements, estate management, and many other specialties. This they must do in order to hold the business of their wealthy clients.

If you are one of the hundreds of thousands who did not finish a four-year course at some college, you can, if you wish, study just about anything under the sun by enrolling in adult educational schools; or, you may start home-study by correspondence.

There are three obvious and real benefits in studying any subject: (1) you are exploring something new, something that takes you out of your immediate world of selling. (2) The more you know, the easier it is to meet all kinds of prospects and to adapt yourself to both their intellectual and emotional reactions to you and your product. (3) Increased knowledge is increased tool-age toward greater earnings.

SAM Chapter Performance Awards Report

July 1, 1954 - April 30, 1955

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Nashville	5739	Columbus	2790
Alabama	5735	Detroit	2743
Baltimore	5664	Western N. C.	2733
Kansas City	5581	Central Pa.	2714
New Orleans	5260	Western Mass.	2691
Bridgeport	5240	Reading	2589
Trenton	5072	San Francisco	2313
Pittsburgh	5067	Central N. Y.	2104
Lehigh Valley	4928	Sacramento	1642
Worcester	4876	Georgia	1637
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Good Salesmen Can Be Financially Secure

During the past twenty years, this country has become the greatest industrial giant the world has ever known. Staying at the top means more than wishful thinking.

Since 1932, when we reached the bottom of our worst depression, millions of our people in all walks of life have become obsessed with the idea of "security," of "independence." Over 50,000,000 men and women are now registered under Social Security. Other millions are depriving themselves of many things in order to build up their savings accounts against age 65 and compulsory retirement, so that they won't have to depend on friends, relatives, or public charity.

This may come as somewhat of a surprise. In 1952, we were told that only twenty per cent of all the more than 11,000,000 men and women over 65 had sufficient funds and social security benefits to make them independent; eighty per cent were deriving their daily bread from other sources.

No one, of course, can be completely independent of others in the twilight years of life. However, those who can most nearly approach complete independence are sales people.

Check the entire list of professions, trades, and scientific projects. You will find that selling offers you the greatest opportunity to make your own "bed" of financial security and independence.

Anyone can sell. This means you, the beginner in the field. It means you, the successful sales person who wants to sell more. Each of you can attain a success that can be counted in dollars—your dollars, commissions, and bonuses on the orders you write. END

C. W. BRYANT joined General Electric Company in 1931 as a Mechanical Engineer, upon graduation from Wooster College. He spent the next 3 years on GE's Advanced Engineering Course, then transferred to manufacturing activities in the Schenectady works, was made Inventory Control Supervisor in 1937, moved up to Inventory Control Supervisor for the Company in 1939. He returned to Schenectady in 1941 as Assistant to Production Manager and in 1946 became Works Purchasing Agent. In 1948 he was made Assistant Production Manager of the Apparatus Department and in 1949 joined the Purchasing Department (Materials Services Department) as Purchasing Agent for Ferrous Materials. In 1951 he was made Manager of the Purchasing Section of Materials Services Department and in 1952 became Manager of the Materials Services Department.

Maximum Product Value At Minimum Cost

By C. Willard Bryant
Manager, Materials Services
General Electric Company
New York City

VALUE is a subject with which we should all be concerned. Our nation's standard of living is based on the idea of giving the customer the best product for the smallest cost possible. We have labeled one approach Value Analysis, and it is one tool we can use to accomplish this objective. On the average, one-fourth of shop cost is unnecessary. The extra cost continues because of patterns and habits of thought, because of personal limitation, because today's thinking is based on yesterday's ideas, and because of the difficulties in promptly disseminating information.

The flow of information is always a problem. It brings to mind the now-famous story told by Admiral "Bull" Halsey during World War II, about John Paul Jones and his crew on the *Bon Homme Richard*. They were battling the British Man-of-War, *Serapis*, and the Americans were hanging on by sheer courage when the British Captain called on them to surrender. Jones leaped to the rail and made his immortal statement, "Surrender Hell, I've yet to begin to fight!" In the waist of the ship, a Marine, bloody and exhausted from the battle looked up wearily at Jones and said, "There is always one guy that never gets the word!"

I hope that none of you is in this category. The techniques I will discuss here apply to an operation which is already doing a successful job of cost reduction.

It applies to production whether job shop or production line and to expenditures whether for materials or services. Most of the examples will center around production material since such studies probably are the nearest to the interest of this group. Some examples of large and some of small quantities will be used. Of course, the examples will seem simple now that they are highlighted, but may I add a word of caution. They *were* not obvious. They *were* routine just as are the dozens and hundreds of similar cases still undiscovered and unexplored. Now they appear simple because it is always easy after we know how.

Value Analysis represents an important concept in modern industrial management. Through Value Analysis, purchasing is a full-time partner in cost reduction and thus a reservoir is tapped of skill and knowledge that brings enrichment of value to all company products.

In engineering, Value Analysis brings a new look to component parts design. It stimulates the cost consciousness of every engineer and increases his ability to make certain that new designs include the latest advances in cost reduction techniques. Value Analysis is a valuable new tool which enables manufacturing to supplement and improve the constant efforts of methods men and foremen. It extends the range of those responsible for production by obtaining assistance from specialists in their company or by taking their problems directly to specialists elsewhere for solution. Value Analysis offers to any group in a company a basic approach to greater value through principles and procedures universally applicable and readily understood.

Value Analysis is *not* just another name for cost reduction, nor is it a substitute for that activity in any of its existing forms. It is *not* a process by which we obtain lower prices from our vendors without justifiably lower cost. It is *not* a cheapening process by which we lower quality.

It *is* a supplement to cost reduction

A paper given before the S.A.M. 10th Annual Timestudy & Methods Conference.

which greatly improves the effectiveness of the program. It *is* a way of thinking or a management philosophy. It permits value improvement by giving the same or even better performance at lower cost.

To illustrate my earlier statement, that 25% of the shop cost can actually be removed, we might look at a few examples. The first one (A38) is this molded washer dial which originally costs 12c. Another supplier applied his ingenuity to the problem and provided the same dial with letters molded in and automatically painted. This is actually a better product for half the cost.

This undercut screw (A101) was costing 15c each. It was recognized that rolling the threads would reduce the cost of this element but would not provide sufficient depth in the undercut. Through a rather intense study, someone thought of the suggestion that interfering threads could be rolled on the undercut portion and the two interfering threads would strip the undercut clean. It was tried and it worked. It resulted in obtaining the same function for 1½c or 1/10th of the cost at a saving of $20,000 a year.

Resistance To Change Impedes Development

In the field of packaging, these small parts (A97) were packed in the material you see here. Interestingly enough the parts are unbreakable.

This gasket (A84) which is about 1 foot square was used in small quantities and was made by hand at a cost of $4.15 each. A specialty supplier is providing it for only 15c, a 96% reduction in cost.

A cover (A73) formerly die cast costing 60c was submitted to a vendor who specializes in converting castings to stampings. As a drawn part, it cost only 20c. It was of superior quality and was purchased at a saving of $39,000 a year.

We must overcome our resistance to change in order to develop the maximum product value at minimum cost. This resistance prevents the adoption of constructive suggestions and ideas which are necessary to an improvement. Secondly, more and better information must be made available for analysis purposes.

Proper decisions must be based upon all of the facts rather than some of the facts and the balance must be based on opinions. The third step would be to apply better techniques. These techniques include utilizing specialists for special problems, creative thinking, and evaluating function. We must use value specialists who are trained and whose job it is to be creative rather than to check on the activities of others.

These four requirements are met by integrating approximately 20 techniques into a Value Analysis job plan. The first step in the plan is the Information Phase (A130) where we obtain *all* the facts and not opinions and where we determine the function, the cost, quantity, vendors, drawings and all necessary information to give us a clear understanding of the problem.

Without Development Ideas Are Dime A Dozen

The second step is the Speculative Phase (A133) in which we propose every possible solution to the problem encouraging free use of the imagination. We record every suggestion that seems remotely possible.

The third step is the Analytical Phase (A136) in which we estimate the dollar value of each idea. We attempt to develop all ideas with the emphasis placed in proportion to their value and their probability of accomplishment. If the idea really has promise, we endeavor to eliminate and overcome any objections.

The Program Planning Phase is the fourth step (A139), where we break the job up into small parts and select specialists within the department, the company or outside of the company who might give us assistance on the particular problem.

The fifth step (A142) is the Program Execution Phase. This consists of selecting the best ideas and pursuing them diligently to a conclusion. We solicit suggestions from others to develop and further improve the original idea.

The last step is a Suggestion Sheet phase (A148). Here we state in a concise manner the best suggestions and show their possibilities. The Suggestion Sheet is then turned over to another representative of management for follow-up and prompt action. We find that this plan of action is very necessary.

Unless developed, ideas are a dime a dozen. In fact, we might summarize the entire job plan by stating that (A124) "Well Developed Ideas" will inevitably (A128) "Produce Results".

Value ability, not value consciousness, is developed by a thorough mastery of a number of techniques integrated into this job plan. Some of these techniques are very simple but fundamental. Before discussing them we should recognize, however, that there is nothing inherent in value. There is no set rule or formula by which we can determine the value of a particular item. Value is always determined by comparison. To cite a very simple example, this pipe plug machined from bar stock (A11) was costing $15.

One of our value analysts compared this plug to one that he might buy at a plumbing shop. He found that a steel plug this size could be purchased for $3. If cast iron could be used, it is available for 57c. The value then is established at the $3.00 level or the 57c level depending upon which could be used.

Carrying this process one step further, there is a technique of evaluating function by relating the cost to the function. This analysis can be made using these five questions (A115). What is the part? What does it cost? What does it do? What else would *do* the job? What would that cost?

Recently one of our value analysis studies involved this special spacer stud. We then put our five questions to work.

First, what is the part? It is a spacer stud. What does it do? It holds an assembly together and separates two pieces in that assembly from one another. What does it cost? It costs 15c each. What else would do the job?

The Next Logical Development

It was suggested that a cold-headed stud might do the job, but it was found that it was not possible to gather together the necessary amount of material for the spacer, but a simple cold headed stud would cost only 1½c.

The spacer function was then accomplished by using a rolled spacer costing 1c, and so finally what would that cost? A total of 2½c thus giving us a saving of $50,000 per year on 400,000 studs.

The next logical development of this approach is a technique called dividing costs into functional areas. For example, a large switch cost $118. The Product Department had "cost reduced" it until they could do nothing more. By separating the cost into functional areas, it was found that the electrical function was being accomplished for $10. Further, it was found that the mechanical function was being accomplished for

$13. In other words, the basic purpose of the switch was being acomplished for only $23, but the actual switch was costing $118.

The next functional area is the case and cover in which the switch is housed. This function of mounting and enclosure was costing $50. The assembly, labor and overhead came to $45. Immediately, it is obvious that the case and cover provides the best opportunity for improvement. Shortly thereafter the $50 cost was reduced to $14.

An Example Of Creative Thinking

Creative thinking is, of course, another technique which is widely used by many companies to get new ideas or a fresh approach to a problem. These so-called creative sessions receive a lot of publicity. In these sessions we are encouraged to use our imagination without restraint. We refer to them properly as "no negative" sessions. One of our department managers of engineering heard of such sessions and decided that he would try this philosophy in one of his meetings. He called some of his engineering men together and outlined a problem to them pointing out that they were going to have a "no negative" session and that anyone who brought up a negative thought would be fined $1. The dollars would be placed in a kitty, and if at the end of the meeting they had enough money, the group would go out and have a steak dinner. He said, "This worked out fine. So we had $37 in the pot. The only difficulty was that $17 of them were mine!"

As an example of creative thinking, terminal boards (B27) were made with stamped terminals riveted into laminated plastic. During a creative session some one suggested that we "sew" the terminals in with a type of sewing machine. As it developed, a continuous strip was actually sewn into the terminal board and automatically cut and crimped. The result was the same performance for one-third the cost. Everyone had creative ability, but in many of us that creative ability is suppressed and not developed. These creative sessions and brain storms are excellent mental exercise to develop creativeness and reduce the resistance to change. If you are further interested in exploring creative thinking, I would like to refer you to Alex Osborn's book, "Your Creative Power" published by Scribners.

Another technique which is closely akin to creative thinking is that which we call "Blast—and then Refine." We spend too much time endeavoring to remove 5% or 10% of cost. It has been found that it is actually easier to remove 50% of the cost in many cases. This statement probably sounds like the most ridiculous one of the year. However, it is true because while attempting to remove 50% of the cost, we push out into areas where no one else has thought improvement possible. Many times we will be able to come up with excellent ideas to reduce cost in the same period of time.

Resistance to change can also be overcome by providing new information in the form of specialty material, specialty products and specialty processes. For example, this pulley formerly die cast cost 74c. Now it is fabricated and costs 63c or a saving per year of $3,000(A7). Another pulley was machined from bar stock at a cost of 60c but when die cast it cost 22c at a saving of $22,000 a year (B59).

This speaker core (A20) cost 3½c as a screw machine part. Changing the tolerance slightly permitted it to be upset for 1½c. Many suggestions are developed by specialty vendors. This die cast cover cost $1.07(A44). It was referred to a supplier. He changed it from a casting to a stamping. His suggested design cost only 57c or a saving of $54,000 a year. This spring was costing 9c each. When its value was analyzed, it was found that the spring was worth 3c but the special long hook was costing 6c. Working with a supplier we purchased the spring for 3c at a saving of $35,000 a year (A26).

Specialty Products And Human Relations

These centerless ground stainless steel pins (A81) were costing $3 a thousand. By using a slightly smaller diameter stock, one centerless grinding operation was eliminated. Also the method of inspection was changed to a sampling inspection where we had formerly used a 100% inspection. The result was that the same pin cost $2 a 1000 thus saving $100,000 per year.

In the materials field, an impeller was being machined from high alloy steel for 40c. A better part was produced from powdered metal for 10c saving $61,000 a year (A30).

In another case a switch was being fabricated from special parts for 86c. A supplier's kit of standard switch parts is available from which similar switches can be assembled for 16c.

Many specialty products are also available. One special knob was being purchased for $2.25. (A42) actually a superior knob of standard design could be purchased from a specialty supplier for 25c.

In any program such as this, human relations are extremely important. Charles F. Kettering, Research Consultant, General Motors, said upon accepting the Award of Merit given by the Alumni Council, "The consensus of studied opinion is always wrong when it deals with a new project." He is saying that more often than not expert opinion on anything is wrong.

Doctors of their times scoffed at Louis Pasteur's theory of bacteria. Newspapers ridiculed the first steamboat as "Fulton's Folly". The man that stood on the sands at Kitty Hawk came there to laugh at the Wright Brothers.

How To Sell New Ideas

We take a great deal of courage from these examples and from Mr. Kettering's statement. If upon presenting any idea to an expert, he readily agrees, we can conclude one of two things—either our expert is exceptionally open-minded or the new idea must be basically wrong. New ideas must be sold by a positive approach. We can apply a technique that is used by many a successful man who will always try to sell a person on the idea before telling the cost.

Value Analysis must be taught to a large number of people within an organization. Nearly everyone must think differently and act differently. When they do, you will soon see better values. It is generally desirable to assign a man full time to analyzing value so that he might develop value ability skill and can spearhead in this activity.

If we are going to retool management for competition, we must make sure that management is certain that its companies' products are worth their price.

Automation is one way we can run twice as fast as we can, but this alone will not secure our location in the market place.

Among the other tools we must use, and one we will reach for the most, is Value Analysis. END

JAMES R. BRIGHT graduated from Lehigh University in 1939 with a B.S. in Industrial Engineering, worked for General Electric until called for active duty overseas. Upon his return to the U.S.A. he was assigned as instructor in Ordnance Engineering at West Point. In 1946 he became a member of the Editorial staff of Product Engineering, *was made editor in 1948. In 1950 he went to* Modern Materials Handling *as Chief Editor. From 1950-54 he traveled widely throughout the U.S.A., Canada and Great Britain, studying industrial materials handling in every sort of industry. In 1954 he joined the faculty of the Harvard Business School as lecturer on Industrial Management. He is the founder and director of the Annual Material Handling Training Conferences to train materials handling engineers for industry.*

Retooling For Materials Handling

By James R. Bright
Lecturer on Industrial Management
Graduate School of Business Administration
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It may be easy to estimate what is spent for materials handling in your plant, and to judge whether this cost can be reduced; but it is more difficult to provide the proper organization for retooling your materials handling. After suggesting an overall handling review program, Mr. Bright discusses important developments in materials handling devices and explains his Mechanization Profile Chart for analyzing the level and span of automation in plant processes.

RETOOLING for material handling implies that a firm knows its current status in the handling field, that it has appraised handling in its plant against the state of the art, and that the company is psychologically and organically prepared to apply new concepts within the limits of economic and operating feasibility. How very few firms can give themselves an honest clearance on these points! A genuine job of retooling for handling implies more than buying a couple of fork trucks or a piece of conveyor. It implies and requires a management philosophy that is integrated from one portion to the next and where the mechanization is done with the main object in mind. Let me emphasize that the main object is not the reduction of material handling cost. It is the reduction of unit production costs, and these are by no means the same things.

Now what is the current status of handling in your plant? Do you and your management have an accurate idea of what you are spending for handling? Do you have even a rough idea?

Some simple studies may provide startling inspiration. For instance, what per cent of your labor bill goes for handling? Most firms lack a cost accounting system to identify this item, but you can achieve a rough approximation by selecting from the payroll those people whose function clearly is handling — truckers, cranemen, dock labor and similar help — and totaling their wages. You can use your own judgment as to whether to include stock chasers, motor truck drivers and other people concerned with moving materials, yet not conventionally so classified. Perhaps the best idea is to include them as a separate category. Finally, you can make random observations of various production workers to select some percentage as an approximation of the time that the average worker spends in handling distinct from his production activity. On an automobile assembly line, for example, the average worker does very little handling unassociated with his job. Materials are fed almost into his hands. By way of contrast, a machinist in a job shop may spend as much as 30 per cent of his time moving material to and from his work area and the machine feeding station. Granted that such estimates are crude and must be tempered with good judgment, they will give you a rough idea of the man hours or payroll dollars going into handling as distinct from production.

The sum of these handling cost estimates should be reflected as (a) a per cent of total labor cost, and (b) a per cent of total manufacturing cost.

How do these figures look in your plant? If they are small, you are already doing a good basic job. But if they are typical, you will find that they amount to 30 to 60 per cent of the total labor bill, and 15 to 40 per cent of manufacturing cost. Naturally there are exceptions at both extremes.

Let us reconsider our aim — to appraise our status. Here is a cost figure. Is it receiving management attention in proportion to its seriousness? The answer is likely to be a resounding "no" in most firms. Further ammunition and enlightenment easily can be uncovered:

Take any common part or product in your shop and total the number of production operations, then total the number of storages, temporary delays and permanent delays. How do these figures contrast? They will be shocking in most plants.

Last year in an S.A.M. seminar participants from eight firms made such analyses. It was found that a window frame for an automobile made of 5

parts requiring a total of 37 operations was handled 208 times and had 198 temporary storages. This was not exceptional. Seven of our firms showed that the ratio of handlings to production operations was about 7 to 1. Only one of them was as low as 3 to 1. Why must we handle something seven times in order to put it through one production station? Is your plant any better? Whatever your ratio, are you satisfied with it?

"Time," we all tell each other, "is money." So, what is our present handling system doing timewise? Let's take this same part and total the production times from the operation charts. Now compute the time that a particular piece of raw material from which that part is made is in the plant from receipt until delivery to finished goods storage. Then set up the manufacturing cycle efficiency: Production time/elapsed time to finish.

A few years ago General Electric reported that on a rush aircraft specialty part their figures were 10.5 hours production/220 hours in the plant. That is a manufacturing cycle efficiency of 4 per cent. And it is comparatively good. Most plants will show far lower efficiencies. Our window frame example showed a cycle efficiency of a fraction of a per cent. Another participant in the S.A.M. seminar whose firm made gears reported that, "I was ashamed to mention it. It takes us 37 minutes to make this gear, yet the material on the average is in the plant over three months. The cycle efficiency is about 0.021 per cent!"

Organizational Climate An Important Element

These are not horrible examples. They are everyday, accepted practice in American industry. Can we pride ourselves on our industrial management ability with this kind of performance? Is this the best we can do? Think what it means in terms of inventory investment, inventory control, space, handling facilities, handling labor and other things. I suggest that you set up what you would consider to be a reasonable manufacturing cycle efficiency for your operation. Now compute it from current practice. How close do you come?

There should be little need for more proof in the average plant, that the handling situation can stand improvement and lots of it. . . . So what can be done?

The proper organizational climate is absolutely essential for creating a top-notch handling system. In most plants the first step must be to achieve centralization of material handling authority. Usually there are a dozen or more material handling authorities—the methods engineers, the superintendent of shipping and receiving, the superintendent of raw material and finished goods storage, the plant engineer, and the supervisors of each individual production department. These people usually select and apply handling systems to suit their fancy, their habit, or their budget, or even their tradition. If there is any relationship to the neighboring handling systems, usually it is sheer chance. Is it any wonder that the handling leaves something to be desired? How efficient would your purchasing practice be if each one of these men did their own purchasing? Suppose they did their own hiring, their own accounting, their own maintenance?

Need For A Good Program

Why then should the selection of the handling procedure be left to individual whim? Only sheer luck can result in an efficient, integrated handling system when so many people select and apply pieces of the system. If we think of the plant as approaching one large supermachine, should we allow a dozen "machine designers" to apply a hodgepodge of power trains to this machine? Yet isn't that what is happening?

Management should recognize this need for change and should retool for material handling by creating one centralized material handling authority. In effect, they should tell this authority, "You design, plan, approve, and install a handling system and a handling improvement program that makes good business sense from our vendors, through the plant, to our distributors (not from front door to back door)."

Through such a program the material handling man can achieve maximum good for his firm by working with purchasing and traffic departments to get shipments in a form that minimize the net cost delivered to the point of use on the production floor. This often is quite a different thing from the lowest purchasing price, since it involves purchasing in volumes, in packed lots, and in timing, and by delivery over common carriers where handling improvements will be balanced with purchasing and traffic savings. It is not true that the best purchase price is the lowest purchase price. The true cost to the business is the cost from the vendor plus the cost of putting these materials at the point of use, ready to use. A tremendous amount of savings is available by keeping this in mind, as we shall see from some examples.

The handling authority should work with production supervision in each department and with the plant engineering department, if they are responsible for inter-building handling, for the handling in one department should not create more troublesome handling for the next. Finally, the handling man should work with the traffic department and the sales department to achieve a distribution handling cycle that is economical, that maintains and protects product quality, and that aids the sales effort by meeting customer needs for convenience, low cost handling attractiveness, and similar factors.

Centralization, then, along with the plant-wide recognition of the objective and the authority, will put your firm in a position to create an intelligent whole as far as handling goes.

How well do we stack up now against the state of the art? A good handling system is not measured by the number of pieces of handling equipment in the plant or by the age of the latest fork truck. Rather it is reflected by the intelligent and appropriate adaptation of trends that are useful in furthering the objective of minimum production costs. What are these trends today? Let me quickly condense the major ones.

Significant Trends in Materials Handling

It is clear that we are in the midst of a great wave of materials handling improvements, and certain developments stand out. No claim is made that the following is a complete list but it does cover some of the more obvious trends:

Growing Reliance on the Conveyor. In hundreds of plants some form of the conveyor has become the heart of the plant's activity. It is no longer an accessory. It is the basic production machine. The newest plants are built around the conveyor. The conveyor can be used not only to transport materials from operation to operation, but also to fix the sequence of operations and start pro-

duction actions. It can determine their duration, and stop them.

Various Storage Devices Being Used

In some plants the conveyor is being introduced as a storage device, so that the flow of raw materials from storage to production is just as mechanized and consistent as production itself. In other words, intermittent delivery to a continuous flow line often does not make economic sense. The new storage-conveyor installations are proving this.

Extension of Unit Load Concept. We need not spend many words on this, since all of us have seen the unit load idea growing by leaps and bounds in every field. One recent important aspect is that we are just beginning to study the unit load itself, with the idea of determining its optimum size for the conditions in question. There is some belief that the optimum size for a unit load may be the size needed at the point of issue so that all breaking down will be eliminated prior to use. Thus the vendor would make up the unit load to the customer's specifications, and this would be handled as a unit until it hit the production line.

The Lift Truck as the Universal Handling Machine. It is questionable whether we should still use the term "fork truck," since it scarcely describes the thousands of ingenious modifications that have been made of this vehicle. Hundreds and hundreds of special attachments have been developed to enable it to grasp bales, boxes, crates, drums, tanks, rolls, coils, bulk materials, flat sheets, bar stock, and so on. These attachments are aimed at eliminating pallets or similar accessories and to facilitate manipulation of the loads. The trend is toward creating a kind of giant hand, with all the flexibility of a human hand. Because the fork truck has complete freedom as to speed, path of movement, timing, because it can lift many types of things, because of its relatively low cost and its ever-growing ability to manipulate loads as well as lift them, it is becoming the universal handling device.

Engineered Containers. We are beginning to appreciate that the container may be the heart of the handling system. It involves the mass movement of materials between use points, stacking in unit loads, and the design of an ideal way to get the particular item in and out of the container. Consequently, the

Exhibit 1.

Mechanization Profile for _____

Control Source	Level of Mechanization	Power Source	Operations, Functions, Machine or Part Under Study
Performance Control — Responds With Action	Anticipates action required and adjusts to provide it	Mechanical	
	Corrects performance while operating		
	Corrects performance after operating		
	Identifies and selects appropriate action		
	Segregates or rejects according to measurement		
	Changes speed, position, direction according to measurement signal		
	Actuated by introduction of work piece or material		
Performance Control — Responds With Signal	Records performance		
	Signals nature of measurement		
	Measures characteristic of work		
Mechanical Control	Power Tool, Remote Control		
	Power Tool, Program Control (sequence of fixed functions)		
	Power Tool, Fixed Cycle (single function)		
Manual Control	Power Tool, Hand Control		
	Powered Hand Tool		
	Hand Tool	Man-ual	
	Hand		

engineered container is opening up new frontiers in process design.

Mechanization of Communications to Speed Movement. What controls the speed of material movement through a plant? Some have more than a suspicion that it is the speed at which the equipment is capable of processing material or moving it. The astounding results obtained by the application of mobile radio to fork trucks, yard cranes, straddle carriers, yard locomotives, and other industrial handling devices seem to indicate that we have been overlooking something. The ability to control, through verbal discussion from a single point, has produced increases in efficiency anywhere from 10 to 200 per cent. Deadheading has decreased, emergencies are dealt with on the spot, production data are delivered as current events, not "history four days old," and much expensive and unnecessary paper work is eliminated.

A Flow Chart For Production Operations

Industrial television is coming into use to control handling operations from a distance. The office dictating machine, in a few instances, has demonstrated that it has possibilities as a production-control device. The integrated control panel, with flashing lights to indicate the status of material in bins and hoppers, the amounts of material on the conveyor lines, safety indicators, breakdown indicators, and so forth, is giving many a plant a centralized control point. In effect, it provides a living flow chart for production operations.

Continuous Weighing, Mixing, and Blending. These have existed for a long time. However, new impetus has been given to this field and far more of the bulk handling industries are shifting from batch operations to continuous mixing operations. This implies, of course, continuous weighing and continuous metering, both of which are being done with great success.

Expansion in Overhead Handling Systems. The monorail, the trolley conveyor, and the stacker crane are spreading rapidly. Many assembly conveyors are now being based on the overhead trolley conveyor instead of a floor-mounted chain conveyor. Advantages are ability to provide the optimum working heights at successive production points, keeping the floor free of clutter, making use of space formerly wasted overhead, and releasing floor space formerly occupied to people or to production machinery. Overhead stacking systems based on the stacker crane will go to tremendous heights, which are impossible with fork trucks.

Selective Automation Systems

A fascinating and important development is the automatic dispatch system based on the monorail. Special carriers running on these rails and properly controlled move from building to building or machine to machine with no manpower, and with the utmost safety to materials. Automatic dispatch systems can be made selective, so as to go to any one of a number of points as desired. They have been made to search out empty or full locations in storage or processing, and act accordingly with the material.

Growth of Yard Storage. All over America we are running out of space. Buildings are so expensive that much more storage is being done outdoors. This means that the mobile yard crane has become an important handling device in many an industrial plant.

In addition, the lumber carrier or straddle carrier is growing in application. We are beginning to realize that it is a self-loading truck which enables one man to pick up, move, and unload as much as 22 tons. Since it can be unloaded or loaded in a few seconds and can travel at highway speeds, it has tremendous potential where truckloads must be moved, say, up to 25 miles or so.

The Impetus Toward Automation. The author believes that it can be argued successfully that automation is not the least bit new. Progress toward "push-button" operations has gone far in the chemical industries, the food processing field, and in many other activities. However, the word is such an apt description of the philosophy of continuous and automatic flow that it has spread like wildfire. Automation has been adopted as an expression meaning an organized effort to achieve a high degree of mechanization. It calls for product selection, product design, scheduling, planning manufacturing and handling methods that will maximize economical product runs. Automation might be described as the philosophy of integrating the factory into one giant machine.

Although many people believe that only the mass production industries can make progress in this direction, this is not so. As an example of semi-automation, consider the homemade railroad tie-handling system, in which semi-push-button unloading of railroad ties, semi-automatic stacking, mechanized movement into storage have been developed most ingeniously.

Let us take up this word "automation" a little bit further. Regardless of how the purist chooses to define the word, it is clear that it has become a synonym for the effort to achieve a high degree of automaticity in a manufacturing or distribution operation. Inevitably, material handling is deeply bound up with it. However there has been so much exaggeration, distortion, and over-optimistic enthusiasm that many people in management are downright bewildered as to what it is all about, and as to whether or not they should be doing something about it.

The Various Dimensions Of Automation

During the past year I have put in a great deal of time studying the managerial problems implicit in an automation situation. In the course of this study I developed an analysis of mechanization and what I call a mechanization profile. This is offered here as a guide that will help you to analyze existing and proposed procedures, and at least to give some rough indication as to the degree of automaticity in various mechanical sequences. Through the use of this chart, we begin to appreciate that automation has at least two dimensions. First there is the matter of degree. What level of mechanization are we talking about? What level of mechanization is used, and what should be used? What would be desirable if money were no object? This aspect I would call "the level of mechanization" and I have identified 18 such levels in the attached chart.

Less dramatic but perhaps far more significant is this question of span. The so-called automatic plants turn out not to be very automatic at all under careful examination. The reason this is so is that they have some interesting high levels of mechanization, but these levels span a very small proportion of the total production sequence from receipt of material to delivery. You will find this out very quickly if you apply this chart to the analysis of mechanization over a total production or distribution operation.

The 18 levels of mechanization are shown on the chart. A few of them may require clarification. For instance, the "Power Tool, Hand Control" is exemplified by the hand operated drill press, in which power and guidance for the tool are provided mechanically, but the feeding of the tool into the work, or vice versa, is done physically.

"Power Tool, Fixed Cycle (single function)" is that machine which repeats a single cycle over and over again within prescribed limits. For example, the drilling head so arranged as to advance, drill a one-inch hole and retract, all automatically, reflects this type of mechanization. A belt conveyor or a dragline conveyor are similar examples of fixed cycle mechanization.

"Power Tool, Program Control (sequence of fixed functions)" means the machine that will perform a series of fixed cycle operations, all automatically. The automatic turret lathe or screw machine is a good example.

A study of the chart will show that we soon get into levels of mechanization where the significant difference is the nature of the control. To save time, I shall not labor over descriptions and examples of these levels. At this point I should merely like to emphasize that this chart has been of tremendous help to me in understanding the outstanding examples of mechanization, or automation if you will, which I have seen. It has helped me to compare different operations, and it has been very helpful in removing much of the mystery and exaggeration, as well as downright confusion, that surrounds this area.

A great many people have asked me for copies of this chart and have been extremely fascinated by it. I am just a little uneasy about this and should like to offer a word of caution: I do not consider this chart to be anything more than an aid to orderly thinking and careful, systematic examination of mechanization proposals. It does not quantify, define or evaluate mechanization.

However, it is tremendously helpful in examining so-called automation systems, which will make it clear that we have a long, long way to go toward automaticity. In both level of mechanization and span of mechanization our operations are pretty feeble compared with the theoretical maximum.

By way of closing, let us not forget that this theoretical maximum rarely is economically desirable. We should not forget that the most marvelous, sensitive, flexible and often the most economic tool is man himself. There have been, and there will be more—many, many more—instances in which portions of highly automatic operations are going to be dropped back to lower levels of mechanization because of an oversight. This is the error we must not make in retooling for material handling, or automation if you will: Economic virtue does not necessarily go hand in hand with mechanical excellence. END

Eight Steps To Developing Better Human Relations

IN AN 8-page booklet entitled "The Way to Work Together," Esso Standard Oil Company outlines 8 basic human relation principles which are foundation stones of their employee relation policy. The principles are:

1. *The Importance of the Individual:* "We believe the actions of business should recognize human feelings and the importance of the individual, and should insure each person's treatment as an individual."

2. *Mutual Acceptance:* "We believe that employees, their unions, and management need to accept each other as individuals and as groups and need to respect each other's functions and responsibilities."

3. *Common Interest:* "We believe that employees, their unions, and management are bound together by a common interest—the ability of their unit to operate successfully—and that opportunity and security for the individual depend upon this success."

4. *Open Communications:* "We believe that the sharing of ideas, information, and feelings is essential as a means of expression and as the route to better understanding and sounder decisions."

5. *Employee Participation:* "We believe that better results come about through seeking a balance of viewpoints and through mutual sharing and solving of problems by the people affected."

6. *Local Identity:* "We believe that the individual receives the greatest opportunities for recognition, pride, and job satisfactions through close identification with his local work unit."

7. *Local Decisions:* "We believe that people closest to problems affecting themselves develop the most satisfactory solutions when given authority to solve such matters at the point where they arise."

8. *High Moral Standards:* "We believe that the soundest basis for judging the 'rightness' of an action involving people is the test of its morality and its effect on basic human rights."

MARY PARKER FOLLETT was born in Boston in 1868. At Thayer Academy she first became interested in the significance of scientific methods of study and in philosophy. Later she studied at Radcliffe College and her work there and later works gave her a place among the college's fifty most distinguished graduates. She read history, law and political science at Newnham (Cambridge, England) for one year. She was the founder of the Boston School Centers, and she set up and helped to finance a Placement Bureau in the Girls' Trade Union League, which became an official municipal Department of Vocational Guidance. Miss Follett was an author and lecturer of renown in both England and America.

When Business Management Becomes A Profession

A paper by Mary Parker Follett, presented on November 5, 1925.

Mary Follett devoted a lifetime to searching for the true principles of organization which would ensure a stable foundation for the steady, ordered progress of human well-being. Her teaching was not theoretical, but based on a close study of the practice of a large number of business undertakings. She chose this field of enquiry to supplement her work on local and national government because she realized that the principles which should determine organization are identical, no matter what the purpose which that organization is designed to serve.

FOR MOST people the word "profession" connotes a foundation of science and a motive of service. It would be well, therefore, for us to examine the idea of service. I do not wholly like the present use of that word. In the first place, it has been so over-used that we are tired of it—"Service is our motto", "Service with a smile", and so on. Moreover, this word is often used sentimentally, or at least vaguely, to express good intentions, or even, like charity, to cover a multitude of sins.

"Public service" is not always genuine service; public service corporations are not wholly self-sacrificing associations. "Social service" often means the work necessary to make up for certain defects in society, as pure-milk stations. It is well to have healthy babies; but we are looking forward to the time when the making of healthy babies will not devolve on extra-social agencies, on agencies which would be unnecessary if society were what we hope it will some day become. You see, I do not call pure-milk stations social agencies, as do most people, but *extra*-social; and the distinction I am making here seems to me to have some value. Business is, and should be considered, truly a social agency.

Underneath all the various current uses of the word "service", there is the idea of service as expressing man's altruism, labour performed for another, doing good to others. I think there is a more profound meaning to service than this. Let us look at the matter historically. Is there any foundation in the development of our early communities for the notion of business based on altruistic service? A group of people settling in a new region first plant and sow. But other things have to be done. One buys groceries and sells to his neighbours. He does this expecting someone else in the community to build his store and house and keep them in repair, and someone else to make his shoes, and someone else to look after him when he is ill, and so on. This is an exchange, or interchange, of services. When we say "reciprocal service" it seams to me that we are nearer the facts and also that we are expressing that give-and-take of life which is its noblest as it is its most profound aspect. That person is intellectually or morally defective who is not taking part in the give-and-take of life.

With this understanding of the word "service", I think it's a good word. Its connotation of self-sacrifice, of the recognition of other aims than private gain, makes it a high motive for individual lives and a social asset. If a man thinks of his business as a service, he will certainly not increase private profits at the expense of public good. Moreover, "business as service" tends to do away with one conception which was very unfortunate. There was a notion formerly that a man made money for himself, a purely selfish occupation, in the daytime, and rendered his service to the community by sitting on the school board or some civic committee at night. Or he might spend his early and middle life in business, in getting money, then do his service later by spending his money in ways useful to the community—if he did not die before that stage arrived! The much more wholesome idea is that our work itself is to be our greatest service to the community.

There is, however, a word which gives us a truer idea of the place of business in society than even the expression "re-

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ciprocal service". I refer, of course, to the word you have been thinking of as you have been reading this paper, the word "function". A business man should think of his work as one of the necessary functions of society, aware that other people are also performing necessary functions, and that all together these make a sound, healthy, useful community. "Function" is the best word because it implies not only that you are responsible for serving your community, but that you are partly responsible for there being any community to serve.

For some time there has been emerging a sense of industry as a function. And this among employees as well as among employers. . . .

I said that the chief reason we often hesitate to use the word "service" is that it has been abused. But so was the word "efficiency," which preceded it, and so certainly is this word "function" which is succeeding it. We need all these words—efficiency, service, function—but we need to use all three discriminatingly.

Assuming, then, that a profession (1) is exercised as one of the necessary functions of society, not purely for private gain, (2) that it is the application of a proven and systematic body of knowledge; recognizing, that is, that it rests on the double foundation of science and service, reciprocal service—what are some of the other implications involved in regarding an occupation as a profession?

One is certainly love of the work. A doctor or a lawyer, a teacher, a chemist, or an engineer usually cares greatly for his work, chooses it usually for that reason, voluntarily goes through the training necessary for it, often a long and strenuous training. But many a boy drifts into a business without having felt any particular urge to do that particular thing.

And love of work usually includes satisfaction in work well done. Craftsman and artist and professional man have aimed at this satisfaction, and more and more this is becoming true of business men. There is an expression which I like very much; "honest" work. We speak of a certain carpenter or plumber as giving us honest work. It would be profitable, I think, for each one of us to scrutinize his own work rigorously to see if it is as "honest" as, say, the surgeon's standard. In a recent book the author speaks of the business man's zeal for service, and says that long after the clerks have departed from the office of a big corporation you can see lights burning in the rooms of the executives. Much fun has been made of this sentence, but I think a good deal of overtime work is done, if not for service, at any rate with the craftsman's love of doing a job well. And it seems to me that this is too fine an aim to be made second even to that of service, which sometimes narrows us down to too meagre an ethics. The *whole* grandeur of life is not there. It is indeed a noble word, but so also is self-expression, the love of work, the craftsman's and artist's joy in work well done. It seems to me, in short, that some people have their imagination aroused by the idea of service, others by high standards of accomplishment; that usually these go together; and that no occupation can make a more worthy appeal to the imagination, either from the point of view of the service it can perform or from the tremendous interest of the job itself, than that of business management.

Public Administrators

THOSE whom nature has endowed with the capacity for administering public affairs should put aside all hesitation and take a hand in directing the government; for in no other way can a government be administered or greatness of spirit be made manifest. Those who mean to take charge of the affairs of government should not fail to remember two of Plato's rules: first, to keep the good of the people clearly in view that regardless of their own interests they will make their every action conform to that; second, to care for the welfare of the whole body politic and not in serving the interest of some one party to betray the rest. For the administration of the government, like the office of a trustee, must be conducted for the benefit of those entrusted to one's care, not of those to whom it is entrusted.

From De Officiis *by Cicero*

Professional Standards Developed and Effected Through Group Organization

Men have been greatly helped in developing standards and in adhering to standards by combining into some form of association. Each profession has its association. While I object to the idea that individual professional men have necessarily a higher code than individual business men, I do think that the professions are ahead of business in the fact that their codes are group codes. The errors of the personal equation are thus often corrected. Moreover, members know that they cannot have the respect of their group unless they follow its standards. But business, too, has begun to develop group codes. We can see how various trade associations, begun chiefly for such objects as central credit records or to secure legislation favoring their particular industry, have already improved trade practices and raised trade standards. And managers have now their associations, too. This is a step toward management's becoming a profession.

A professional association is an association with one object above all others. The members do not come together merely for the pleasure of meeting others of the same occupation; nor do they meet primarily to increase their pecuniary gain; although this may be one of the objects. They have joined in order better to perform their function. They meet:

To establish standards.

To maintain standards.

To improve standards.

To keep members up to standards.

To educate the public to appreciate standards.

To protect the public from those individuals who have not attained standards or wilfully do not follow them.

To protect individual members of the profession from each other.

These objects of a professional association may be summed up by saying that a profession provides a corporate responsibility. As most of the objects speak for themselves, I shall refer further to only three: corporate responsibility for maintenance of standards, for the education of the public, and for the development of professional standards.

In regard to the first—maintenance of standards—business can certainly learn a lesson from the professions, where the ideal is loyalty to the work rather than to the company. An architect feels primarily that he belongs to a certain profession, only secondarily that he is working for a particular firm. He may change his firm; but he remains permanently bound to the standards of his profession. I recognize that there is very serious trouble when the standards of one's firm and one's profession clash—*there* is indeed a difficult integration for you. What I am emphasizing here is that in the profession it is recognized

that one's professional honor demands that one shall make this integration. If business management were a profession and had its own recognized code, differences between executives and company heads could perhaps be more easily adjusted. I know a man who recently left a Southern firm because, he told me, he could not reconcile his principles with the way that firm conducted business. When he put the matter to the firm, his principles were treated as a purely individual matter. If he had been a doctor, or if business management were a profession, he could have prevented the matter becoming personal by referring to the accepted standards or methods of the profession.

To What Do We Owe First Loyalties?

When, therefore, I say that members of a profession feel a greater loyalty to their profession than to the company, I do not mean that their loyalty is to one group of persons rather than to another; but that their loyalty is to a body of principles, of ideals; that is, to a special body of knowledge of proved facts and the standards arising therefrom. What, then, are we loyal to? To the soul of our work. To that which is both in our work and which transcends our work. This seems to me the highest romance as it is the deepest religion, namely, that by being loyal to our work we are loyal to that which transcends our work. The great romance of business is not, as sometimes supposed, the element of chance. That spells adventure only for him with the gambler's temperament. The high adventure of business is its opportunity for bringing into manifestation every hour of the day the deeper thing within every man, transcending every man, which you may call your ideal, or God, or what you will, but which is absent from no man.

In regard to the second point mentioned above, responsibility for the education of the public, it is considered one of the duties of a profession to train the public by sticking to professional standards instead of merely giving the public what it wants. An architect, to be sure, may put cupolas and gimcracks on a house he is building, a portrait painter may get rich by painting portraits flattering his sitters, but when architect or portrait painter does these things he is outside professional standards, outside the accepted tradition of a group of people. If business management is to become a profession, business management, too, will have to think of educating the public, not merely of giving it what it asks for. The head of a string of restaurants, one who thinks of business as a public service and is trying to reduce the bacterial count in ice cream. A customer asked one day, "Why doesn't the ice cream taste as it used to?" "We are trying," said the waitress, "to reduce the bacterial count." "Oh, give us our old bugs. We like 'em," said the customer.

Oliver Sheldon says, "Management acknowledges as master the public will of the community alone." I do not agree with that. The public will of a particular community may have to be educated to appreciate certain standards. That is exactly what is going to make business management a profession: to realize that it is responsible to something higher than the public will of a community, that its service to the public does not lie wholly in obeying the public.

And this brings us to our third point. One of the aims of the professional man is not only to practice his profession, to apply his science, but to extend the knowledge upon which that profession is based. A profession means not only a tradition but a developing tradition. There would be no progress if men merely lived up to the standards of their profession. The judge makes a decision which not only disposes of the case in hand, but becomes a precedent. A lawyer often handles a case in such fashion that certain principles are established or strengthened. The doctor not only cures a particular person, but has something to tell his profession about that particular disease. Business lags behind the professions in this respect. You know how often you hear the expression "get by"—"I guess we can get by on that." Men tide over certain situations without doing that which means a progressive policy for their business, or that which helps to establish a standard for business management.

How To Make Business Management A Profession

There is one thing which I think all executives should remember every hour of the day. You are not helping to develop your profession only when you are discussing its demands in the managers' association. The way in which you give every order, the way in which you make every decision, the way in which you meet every committee, in almost every act you perform during the day, you may be contributing to the science of management. Business management cannot become a profession unless business men realize fully their part in making it such. All professions have been developed by the work of their own members. If there were people somewhere in the world creating executive technique, and you were applying it, your job would be big; but it is just twice as big as that, for there is no one else in the world but yourselves to create the science, the air, the profession of business management. This is pioneer work and difficult, but it has always been pioneer work to which men have responded with courage and vigour.

Style An Important Factor Even In Management

We have been speaking of professional standards as formed and developed through group association. Is there not something in the manner in which those ideals are followed which we have hitherto connected more closely with the professions than with business? There is a word which means a great deal to me; I wonder if it does to you. That is "style". Whatever a man does, whether he is a statesman or artisan, whether he is poet or tennis player, we like his activity to have the distinction of something we call style. Style, however, is a difficult thing to define. I have seen it defined variously as adapting form to material, as calculation of means to end, as restraint, as that which is opposed to all that is sloppy and bungling, the performance of an act without waste. Others speak of style as broad design, noble proportion. A manager's job performed with style would have all these characteristics.

I have looked for style in literature and art, games and statesmanship. It is interesting to watch polo from this point of view. In all the games of polo I have seen, the best players have usually had style: no waste of muscle, calculation of means to end, yes, and proportion and design, too. Again, watch a good actor when his acting has the distinction of style. There is restraint, calculation of means to end, no waste of energy. A physiologist watching a scene of agony on the stage will, if the acting is of the first order, tell you that he sees no waste of muscular force. In poor acting, how-

ever there is such waste. Such acting lacks among other things, style.

Professor Whitehead gives attainment and restraint as the two chief elements of style and says:

Style is the fashioning of power, the restraint of power. The administrator with a sense of style hates waste, the engineer with a sense of style economizes his material, the artisan with a sense of style prefers good work. Style is the ultimate morality of mind.

And further:

With style, the end is attained without side issues, without raising undesirable inflammations. With style, you attain your end and nothing but your end. With style, the effect of your activity is incalculable, and foresight is the last gift of gods to men. With style, your power is increased, for your mind is not disturbed with irrelevances, and you are more likely to attain your object. Now style is the exclusive privilege of the expert. Whoever heard of the style of an amateur poet, of an amateur painter? Style is always the product of specialist study, the contribution of specialism to culture.

What Is The Proper Definition Of Business?

That is an interesting phrase, "the contribution of specialism to culture." Then you need not, according to this definition, give your daytime hours to a low thing called business, and in the evening pursue culture. Through your business itself, if you manage it with style, you are making a contribution to the culture of the world. It makes business management interesting, doesn't it? I take it that you are taking this course throughout the winter to learn how to give to your work of management the distinction of style.

I have left to the last what seems to me the chief function, the real service, of business: to give an opportunity for individual development through the better organization of human relationships. Several times lately I have seen business defined as production, the production of useful articles. But every activity of man should add to the intangible values of life as well as to the tangible, should aim at other products than merely those which can be seen and handled. What does "useful" mean, anyway? We could live without many of the articles manufactured. But the greatest usefulness of these articles consists in the fact that their manufacture makes possible those manifold, interweaving activities of men by which spiritual values are created. There is no overproduction here.

Suppose the doctors should tell us that it would be more healthy to go barefoot, and we should all take their advice. What would become of all the shoe factories. Of course, the manufacturers would find out how much of their equipment could be used in making something else, and they would turn to the manufacturer of that other article. In that case, must they consider their previous work of no value? Must an old man who has been a shoe manufacturer think he has wasted his life in producing something actually injurious to the community? I think he would have to, if all he had produced was boots and shoes, the material product. But not if the man who worked in that factory, managerial or manual workers, had through their work become more developed human beings. And the tendency today in many plants is, most happily, to make that development one of the objects of the industry. It is the development of the individual involving the progress of society, that some of our finer presidents are aiming at, not pecuniary gain only; not service in the sense of supplying all our present crude wants, but the raising of men to finer wants. If the aim of the lawyer is justice, if the aim of doctor is health, if the aim of the architect is beauty, business, I am sure, may have as noble an aim. There are business men today who perceive that the *process* of production is as important for the welfare of society as the *product* of production. This is what makes personnel work in industry the most interesting work in the world.

CHAPTER MEMBERSHIP STANDINGS AS OF June 1, 1955

New York	406	Providence	67
Northern N. J.	350	Wilmington	67
Philadelphia	342	Sacramento	67
Cincinnati	310	Bridgeport	66
Chicago	279	Columbus	64
Cleveland	259	Alabama	63
Lancaster	246	Reading	62
Pittsburgh	241	Knoxville	61
Detroit	206	Hartford	58
Boston	188	Central Penna.	53
Washington	181	Charlotte	53
Milwaukee	157	Clearing	53
San Francisco	155	Calumet	52
Los Angeles	139	Lehigh Valley	49
Dallas	137	St. Louis	47
Worcester	130	Western Mass.	47
Indianapolis	118	Greenville	47
Western N.C.	105	Central N. Y.	45
Raritan Valley	104	Twin City	42
Montreal	100	New Orleans	37
New Haven	100	Fox Valley	37
Binghamton	99	Madison	34
Kansas City	98	Portland	31
Hudson Valley	97	Nashville	30
Greensboro	90	N. E. Penna.	28
Dayton	89	Louisville	23
Baltimore	88	Stamford	20
Georgia	73	Non-Chapter	123
Richmond	71	Non-Resident	83
Trenton	67		

Business Pride And Professional Pride

If business offers so large an opportunity for the creation of spiritual values, and I think it offers a larger opportunity than any single profession in the possibilities of those intimate human interweavings through which all development of man must come; if many business men are taking advantage of that opportunity, should we any longer allow the assumption which I have seen stated three times since last Summer, that the professions are for service and business for pecuniary gain? I have seen the expression "the greed of the business man". I have seen it stated that the business man's test of an undertaking is, "Will it increase income?" while the professional man's test is, "Will it increase the sum of human welfare?" But I do not think this distinction valid. I object to dividing us off into sheep and goats and putting all the goats on the side of business. Professional men as well as business men used to think less of pecuniary gain. But that is *their* responsibility. Ours, it seems to me, is to redeem the word "business." We are told that business should have a professional conscience. Why not a business conscience? Why not business pride as well as professional pride?

It is unfair to think that all business men have only as high a code as is compatible with keeping profits at a certain level. I have known business men who were willing to make sacrifices to maintain certain standards. Napoleon called England a "nation of shopkeepers." That was an epitome of his own character. Shopkeeping did not have the pomp and glory of *his* trade. It had none of the deceptive values on which his life was based.

We have progressed in a hundred years beyond Napoleon's notion of shopkeeping; yet in an interview reported in the *Boston Herald* the artist, Cecilia Breaux, said, in effect, "The business man aims at success in the sense of wealth or prominence; the artist's

idea of success is the satisfactory development of an idea." If I were a business man, I would not let business lie any longer under this stigma. It is true that the artist or the professional man undertakes to solve his problems, he does not try to "get by." He would rather be lamely and blunderingly trying to solve his problem than brilliantly escaping it. But why should not the business man have the same attitude? Cecilia Breaux said in this interview, "The artist grips his idea and will not let it go until it has blessed him, as the angel blessed Jacob."

Business Men Can Lead The World

I see no reason why business men should have lower ideals than artists or professional men. Let us, indeed, do everything possible to make business management a profession, but while we are doing it, I think we may feel that business men can make as large a contribution to professional ideals as the so-called learned professions. I think, indeed, that the business man has opportunities to lead the world in an enlarged conception of the expressions "professional honour," "professional integrity." That phrase which we hear so often, "business integrity," is already extended to mean far more than a square deal in a trade.

I have tried to show in this and the previous lecture that business management has already acquired some of the essentials of a profession, that it is on the way to acquire others. By far the most significant sign that business management is becoming a profession is that the old idea of business as trading has begun to disappear. The successful business man of the past was thought to be the one who could get the best in a trade. This required neither great intelligence nor special training. A man used to think that if his boy was not clever enough for a profession he must be put into business. Today we think that business management needs as high an order of intelligence, as thorough a training as any of the "learned" professions.

It seems to me very significant that we seldom hear today the expression so common twenty or even ten years ago—"captains of industry." While all captains of industry did not fly the black flag, still in the nineteenth century ruthlessness and success too often went together; buccaneering and business were too often synonymous. Even when this was not so, the captain of industry was at best a masterful man who could bend all wills to his own. This is beginning to change. Success is now seen to depend on something other than domination. It is significant that two ideas which so long existed together are disappearing together—namely, business as trading, and managing as manipulating.

As arbitrary authority in the management of business has decreased, as authority has come to be associated less with mere position and more with actual capacity, the whole executive force has more opportunities to exercise creative ability in contributions to organization. Please bear in mind that by the word "organization" I mean far more than constructing a system. As Mr. Dennison has told us, "We have to reorganize every day." By which he means, I think, that many of the daily executive duties contribute to a developing organization.

Weakness In Many Plants Is Management

Organization is the word most often heard today in all discussions of business development. The greatest weakness in most industrial plants is seen to be organization. The organization engineer is the one most in demand. Do you not think that the recognition of organization as the chief need of business is rather interesting when we remember that conscious organization is the great spiritual task of man? We speak of the "composition" of a picture; it is the way the artist has organized his material. The harmony of a piece of music depends on the way the musician has organized his material. The statesman organizes social facts into legislation and administration. The greater the statesman, the greater power he shows in just this capacity. It might be fun to try to do it in one's own life, to say: "Here are the materials of my life. How would the artist arrange them in order to make the composition the most significant? How would he subordinate lesser values to higher values? How would he manage to give everything its fullest value? Or we might ask ourselves the craftsman's question, "How can I make of my life a whole whose beauty and use shall be one?" Organization is what separates mediocre endeavour from high endeavour. No one has a better opportunity then the business manager to take part in this the highest endeavour of the human race.

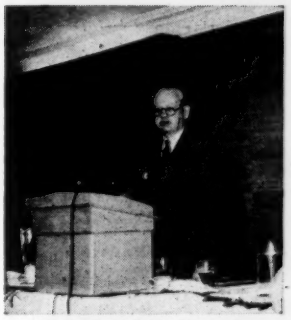
It occurs to me that you may think, because I have hardly mentioned the profit motive in business, that I have deliberately avoided it. I assure you I have not. We all want profit and as much as we can get. And this is as it should be when other things are not sacrified to it.

Substituting Service Motive For Profit

When people talk of substituting the service motive for the profit motive I always want to ask: Why this wish to simplify motive when there is nothing more complex? Take any one of our actions today and examine it. There probably have been several motives for it. It is true that if anyone asked you why you did so and so, you would probably pick out to present to the public the motive which you thought did you the most credit. But the fact of the actual complexity remains. We work for profit, for service, for our own development, for the love of creating something. At any one moment, indeed, most of us are not working directly or immediately for any of these things, but to put through the job in hand in the best possible manner, which might be thought of, perhaps, as the engineer's motive. But whatever these motives are labelled —ethical or service motive, engineer's motive, craftsman's motive, the creative urge of the artist, the pecuniary gain motive—whatever, I say, these various motives, I do not think we should give any up, but try to get more rather than fewer. To come back to the professions: can we not learn a lesson from them on this very point? The professions have not given up the money motive. I do not think we should give any up, but try to get more rather than fewer. To come back to the professions: can we not learn a lesson from them on this very point? The professions have not given up the money motive. I do not care how often you see it stated that they have. Professional men are eager enough for large incomes; but they have other motives as well, and they are often willing to sacrifice a good slice of income for the sake of these other things. We all want the richness of life in the terms of our deepest desire. We can purify and elevate our desires, we can add to them, but there is no individual or social progress in curtailment of desires.

END

COLONEL LYNDALL URWICK of Great Britain came to New York to accept the Wallace Clark Award, which was presented to him on May 24, at a luncheon in his honor given by the Council for International Progress in Management (CIPM). The Award was given to the Colonel for "Distinguished Contribution to Scientific Management in the International Field". One of the most important figures in both British and International management for a quarter of a century, Colonel Urwick, a graduate of Oxford, worked with Seebohm Roundtree at the Oxford Management Conferences, became Honorary Secretary of seven Management Research Groups founded by Mr. Roundtree in 1927.



Col. Lyndall Urwick

Colonel Urwick Accepts Wallace Clark Award

The Wallace Clark Medal award was developed in 1948 for S.A.M. by a group working under Dr. Lillian Gilbreth, became official in 1949. The CIPM assumed trusteeship for the award, with S.A.M., the American Society of Mechanical Engineers, the American Management Association, and the Association of Consulting Management Engineers as sponsors.

ONE OF MY most treasured possessions is a copy of the first volume of Sir Winston Churchill's biography of his great namesake, the first Duke of Marlborough.

It is precious to me for two reasons. It was the first installment of what I regard as the first flowering of Churchill's genius as a historian. I think it is true to say that had he not received Great Britain's highest distinction, the Order of Merit, as a statesman and the saviour of his country, he would have been awarded it for his historical writings. So it was a link for me with one of the many facets of a man so great, even in his own time, that it has been a privilege to be his contemporary. For all of us, on both sides of the Atlantic, he has added to the richness of life. He has made living, for each one of us, less of a chore and more of an adventure.

Also he has been an emblem. Let us never forget that his mother was an American citizen, a Jerome. And she had much to do with the awakening of his intellectual interests and his determination to be of some service to his generation, as she was behind many of the early moves in his career. She gave him much more than the splendid physical make-up which has endured so long and to such good purpose. So, in the most intimate sense, he is a symbol of what is possible when the best of the English-speaking peoples is united in a common personality. The thought of that union of aims and policies of understanding and affection has been one of the lodestars of my own life. In its realization, in an even closer association between the United States and the British Commonwealth, lies the best hope for the future of humanity.

But that particular volume has a more intimate meaning for me. I was visiting the United States for the first time after my appointment as Director of the International Management Institute at Geneva. With that generosity to fellow-workers which was one of his most endearing qualities, the late Harry Hopf arranged a dinner early in my stay at which I could meet some of the personalities of the management movement here. To my joy and astonishment, he presented me with the book at the conclusion of the party and on the fly-leaf were the signatures of everyone who was present.

I can still recall the "lift" it gave me. There was I, a Britisher, a beginner at the management game, called to a responsibility for which I knew I was ill-equipped. And some of the most distinguished figures in the movement in the United States, the birthplace and the home of scientific management, had sacrificed an evening to wish me good-luck. I would like to say to you today, some of my many friends in this great country, how much that gesture meant to a much younger man nearly a quarter of a century ago.

Today you have made another of those characteristic gestures. You have done me the honour of including me in the recipients of the award founded in memory of my old friend, Wallace Clark. And what an honour it is! You have only to scan the list of past recipients:

My old colleague and friend of close on 30 years, Pieter de Haan. Life has brought Pieter much personal sorrow and many bitter disappointments. But never for a moment have they drained his courage or shaken his devotion to the cause of management. He was the first.

Theodore Limperg of Holland—the man to invite me to address an audience on management outside my own country. Through the short life of the International Management Institute, his counsel, his wisdom, his integrity were a constant support and inspiration.

Your own Lillian Gilbreth. It is a grief to me that she cannot be with us here today. But the reason is a challenge to all of us. Despite her three score years and then some, despite her 27 grandchildren, she is

still at work for management. She is teaching full-time this term at the University of Wisconsin. She stands beside Churchill: another human being who has grown with a legend while still very much alive. Long may she be spared to us to match the story with a still more wonderful reality.

René de Vallière. another friend. I recall his kindness, his humour, his keen mind in a body that was always fighting fit. He retired after many years of devoted service to management and engineering in Switzerland. But to anyone who had to meet him it was impossible to think of René de Vallière as old: he had imperishable youth.

Erwin H. Schell. Erwin, you have been for longer than I can remember the Dean of all Deans of business schools. Unlike Shylock, to whom Gratiana wished seven godfathers at his christening, you have godsons unto even a hundred and seventy times seven. The books you have contributed to the movement have borne witness to the quality of your thought. The story that you keep in touch personally with every one of your alumni is testimony to what we think of that much more important contribution that comes from your heart. You will go down in the history of management as the President-maker . . . a far more glorious title than the Earl of Warwick's. He could only make kings through blood and treachery. I am indeed proud to receive this honour at the hands of a teacher and administrator who has done so much in the shaping of the men who have built the American economy.

Rolf Nordling I have known less well. It is one of the tragedies of World War II that it broke so many ties between the countries which were invaded and those of us who had loved France, ties which are only now being repaired. But we should never forget that in the early days of the movement France was the only European country to produce, in Fayol, le Chantelier and de Freminville, a trio of leaders worthy to stand beside Taylor, Gantt and Gilbreth. Nordling has laboured patiently amid immense difficulties to maintain that great tradition.

Who would not be, at the same time, proud and humble, to be chosen to stand in such company? Proud that his friends should have thought him worthy, humble to know the many directions in which he must fail to match the qualities which have already shed lustre on this award.

When. in 1951, the International Committee for Scientific Management honoured me with its Gold Medal, Lillian Gilbreth, in congratulating me, added, "Remember, Lyn, a medal is only an opportunity." May I, in thanking you all for your presence here and particularly Pearl Clark, Erwin Schell and the members of the Council for International Progress in Management, assure you that as long as life and health remain to me I shall endeavour to be a faithful servant of the movement.

My thoughts turn inevitably this afternoon to the old friend in whose memory the award was founded. Wallace was a great management consultant. And the quality above all others which made him great, perhaps the most effective of all those who have tried to interpret "the secret of the American know-how" to men of other lands, was his patience. It was, I am sure, the fruit of an intellectual modesty, so sincere and so deep-rooted, that it never occurred to him to be impatient with those who could not at first appreciate truths which seemed so clear to him. He invariably regarded it as his failure, not theirs, if conviction came slowly.

I think it of great importance to the movement that we should remind ourselves at this moment, not only how greatly that quality appealed to men in many different European countries, but how successful it proved practically.

Since the second world war the leadership of the free peoples has fallen rather suddenly, a little unexpectedly and often somewhat to their dismay, into the hands of the citizens of the United States. They accepted that leadership with a gesture of unparalleled generosity. I believe that when history looks back the Marshall Plan will appear on the record as one of the greatest acts of inspired, of almost unbelievable, largeness of heart and vision, ever conceived by a great nation.

Do not be disappointed if the results at the moment fall short of your expectations. They are there alright, fomenting under the surface. But the gestation period for new ideas, the waiting time before they issue in action, is necessarily longer in older societies than in your own.

How would it be otherwise? The people of the United States are conditioned by ethnographic make-up, by cultural selection, by geographic circumstance and by historic accident to be more ready than the older European cultures to adjust themselves to the postulates of an adaptive society. They were recruited initially from individuals of Anglo-Saxon and Dutch stock, who were self-chosen as protestant against the religious and social rigidities of established societies. These original recruits were reinforced, generation after generation, by emigrants from almost all the European strains, again self-selected as those who were prepared to face fundamental changes in their way of living as the price of opportunity.

This population, with already a high coefficient of natural adaptability, was poured into a continent of almost infinite economic potentialities, a continent moreover which, until well into the first century of the industrial revolution, still had an unexplored, an unexploited frontier, so that as the East settled down, those who felt any irritation with the social system in which they found themselves were admonished to "go West, young man". That too was no pious exhortation to more conventional behaviour. It was a piece of serious advice. Let the young man who was constrained quit grumbling and measure himself against reality. It was a test in which many, to their honour, triumphed and wrung fame and fortune from the wilderness. But it was also the finest school of practical adaptability the world has ever known.

So do not be surprised if the European countries fail to accept as readily as you have done, or as quickly as they should for their own advantage, the truths about how to make the most of an economy based on power-driven machinery, which seem so obvious to you here. You have no monarchical or feudal past to persuade employers that divine inspiration or seigneurial privilege give them an inalienable right to govern wrong or that those who suggest that they might manage better are guilty of a kind of blasphemy.

I have heard it suggested only recently that the management movement in many European countries is no longer worth supporting because it does not command the whole-hearted backing of leading businessmen. Did the Taylor Society or the American Management Association have the backing of the majority of employers in this country thirty years ago?

They do today. But why? Thirty years ago the movement for schools of business administration in your universities which had started in 1902 really gathered headway. 66 new schools were founded between 1919 and 1929. The men who are Presidents and Vice Presidents of corporations in the United States today are the first harvest of that tremendous move forward in management education. There has been no comparable effort in any European country.

Those who have fought for management in the European countries have, on the whole, been smaller men . . . technicians, engineers, a few educationists, consultants like myself. If you grow impatient that they cannot move employers faster, that they cannot quickly reproduce the pattern which you have achieved here, what will happen? A few employers of vision will see the way the wind is blowing and will support you: but, they will always be men of many interests and preoccupations. They will lack a basic education in management. Their interest will be political, not professional, and management cannot thrive under political control.

A scattering of smaller men will see in management an opportunity to win some distinction for themselves. They exist in every country as we all know. They are death to any genuine scientific or technical interest in the subject. For they are not concerned with what is right or true, only with what can be turned to their advantage.

Believe me, I can see very clearly how frustrating to your enthusiasm and to your goodwill is much that is happening in many European countries, not least in my own. But in older societies you cannot sweep and start again quickly as you can here. You can only build on what exists already. By all means bring all the pressure you can to bear on the laggards to move faster. But in the process do not forget those who are truly friends of management, do not try to cut loose from the history of the movement, however insignificant the results may appear compared with the splendid headway you have made here.

To do so would be to ignore the lesson which seems to me to stand out from Wallace Clark's life and great achievement, the lesson which this award communicates. You cannot by any device of organization, by any form of pressure or propaganda, lead people to move faster than they are willing to come with you spontaneously and of their own accord. Management is not a series of devices or techniques. It is, as Taylor said, "a mental revolution," a matter of intellectual and spiritual conviction. Nothing is harder in this world than for those of us who see what we believe to be truth clearly to be patient with those who seem to us wilfully blind. Because Wallace Clark had that patience he did more to spread the idea of management internationally than we can ever know. Let us strive in fellowship to emulate his example. END

New S.A.M. Publications Director

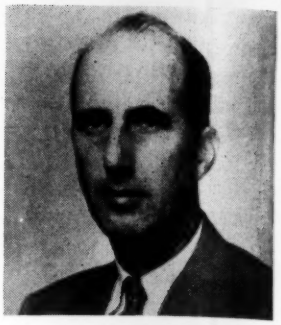
Joseph H. Jackson

JOSEPH H. JACKSON has been appointed the new Director of Publications for S.A.M., and will be responsible for the Society's publications and publicity. Working in the National Office under executive vice president Harold R. Bixler, and the Publications Committee, he will serve as editor of *Advanced Management* and the S.A.M. *Newsletter*, assisted by Miss Beatrice Jones, production editor. He will work with the various committees and staff members preparing reports and conference proceedings for publication, will send out the Society's publicity, and make up conference announcements and programs.

Dr. Jackson is a former editor and business manager of the *Journal of Industrial Training*, and has had many years experience in personnel, labor relations, and training with the New Britain Machine Company, the Columbia Broadcasting System, and most recently with the American Gas and Electric Service Corporation. He has done conference and teaching work for the New York State School of Industrial and Labor Relations at Cornell University, and research for the Columbia Broadcasting System. He has been a member of the New York Personnel Management Association and the American Society of Training Directors for many years. He has been chairman of the Public Relations Committee of the New York Chapter of A.S.T.D., Secretary and member and chairman of its Board of Directors.

Dr. Jackson was born and reared in Springfield, Vermont. He concentrated in science and then in philosophy and psychology at Middlebury College, where he received his A. B. degree cum laude in 1935. Following his graduation he studied philosophy at Cambridge University. He completed his graduate studies at Brown University, specializing in ethics, logic, and semantics, and received his Ph. D. degree in 1940.

As your new publications director takes up his work with the Society, joining in the intensified and expanding activities of the coming year, he will welcome your papers and articles, your news of activities and events in the chapters, and any suggestions, comments or criticisms you may wish to make from time to time.



CLARENCE L. PETERSON, vice president of the Brown Instruments Division of Minneapolis-Honeywell Regulator Company, is a 27-year man with the firm. As an engineering graduate of the University of California, he joined Minneapolis-Honeywell in 1927 as combination sales engineer and serviceman. In 1935 he was appointed branch manager of the San Francisco office and held that position until 1940, when he was promoted to regional manager for the firm's Pacific region. Ten years later he moved to Chicago to become Midwest regional manager. In 1952 Mr. Peterson moved to Philadelphia as general sales manager of the firm's Brown Instruments Division, a post he held until appointed divisional vice president in 1954.

Automation Dictionary

C. L. Peterson
Vice President
Brown Instruments Div.
Minneapolis-Honeywell Regulator Co.

TODAY, in the age of the atom, we are daily experiencing miraculous technological advances that have helped make our clothes more durable, our foods more nutritious, our cars stronger, and our aches and pains more curable.

Behind these advances has been the rise of a relatively new industry embracing a cult of its own. The industry — industrial instrumentation. The cult — automatic control. And its high priest is the automatic control engineer.

These engineers have brought with them an almost entirely new language, one that is as unfathomable to the uninitiated as a hot rodder's lingo is to an Englishman. Part of their specialized vocabulary is necessarily technical. Some of the words sound and look suspiciously like Ordinary English but have very special meanings.

More and more these terms are cropping up in the lexicon of today's businessman. They are encountered daily in reports and stories dealing with developments in automatic control and the automatic factory trend. We've tried our hand at translating the most widely used into basic English.

No claim is made that this dictionary embraces the full scope—or meaning—of the colorful jargon of the automatic control engineer. No such work could ever be complete. Like a lusty infant the language of automation is growing all the time.

The definitions offered are purposely simplified; perhaps to an engineer they may even appear childish. However, they are designed for those whose knowledge of automatic control is largely limited to the setting of the thermostat on the living room wall.

A

ACTION. In the automatic field it refers specifically to control action. It is that which is done to regulate the controlling element in a process or operation. The action ranges from the simple familiar "on" and "off" movements to not so familiar derivative and rate types of action.

ANALOG COMPUTER. An electronic calculating machine which solves problems by translating conditions like flow, temperature, or pressure into electrical quantities.

ATTENUATION. Opposite of "gain" (see "gain").

AUTOMATIC CONTROLLER. A device or instrument which is capable of measuring and regulating anything from color to chemical make-up.

AUTOMATION (*auto-MAY-shun*). The modern-day engineer's word for the state of being automatic. Once referred to machine tool applications, but has come to mean the act or method of making a manufacturing — or processing—system partially or fully automatic.

C

CAPACITY. No mystery, simply the measure of the maximum amount of a material (or energy) which can be stored.

CASCADE CONTROL. An automatic control system in which the control units, linked in chain fashion, feed into one another in succession, each regulating the operation of the next in line. (Sometimes called "piggyback" control.)

CLOSED LOOP. A family of automatic control units linked together with a process to form an endless chain. The effects of control action are constantly measured so that if the process goes off the beam, the control units pitch in to bring it back into line.

COMPUTER. A term applied to calculating machines ranging from the Chinese abacus to electronic "brains". In automation, it refers to machines which, once set up, perform a series of individual computations without outside tutoring.

CONTROL AGENT. The middleman, or force, in a control system. Generally

means the energy or fuel which is regulated to affect the value of the conditions or factor being controlled.

CONTROL MEANS. Part of an automatic control device which makes the corrective action.

CONTROL POINT. The value you actually get as the result of some control action. Oddly enough it may not be just what you were hoping for.

CONTROL SIGNAL. The energy applied to the device which makes corrective changes.

CYBERNETICS (*sy-ber-NET-ics*) n. A new field of science which attempts to relate the operation of automatic devices to the automatic functioning of the human body's nervous system. Once accomplished, it hopes to evolve a theory blanketing the field of control and communication—both in machines and men.

CYCLING. A rhythmic change of the factor under control at or near the desired value.

D

DAMPING. A characteristic built into control systems which diminishes the system's natural enthusiasm for making excessive corrections when it detects something gone awry. Not dampening; no water involved.

DATA HANDLING SYSTEM. To the control engineer, automatically-operated equipment engineered to simplify the use and interpretation of the bewildering mass of data gathered by modern instrument installations. Can, for example, automatically handle information fed to it from thousands of widely scattered points in a plant. (Engineers, with their tendency for "two-for-one" terminology, also refer to this as a DATA REDUCTION SYSTEM).

DEAD BAND. A specific range of values in which the incoming signal can be altered without also changing the outgoing response. Sometimes called "dead zone".

DEAD TIME. Any definite delay between two related actions. It is measured, obviously, in units of time.

DEVIATION. No change from the layman's definition — means the difference between the actual value of a condition and the one at which it is supposed to be controlled.

DIAPHRAGM MOTOR VALVE. A pneumatic-powered valve which regulates fluid flows in response to a pneumatic signal.

DIFFERENTIAL GAP. The difference between two target values, one of which applies to an upswing of conditions, the other to a downswing. In other words, suppose the temperature in your office falls and the thermostat is set at 70°F. If the differential gap is 4°, then the temperature will drop to 68°F before the heating system moves into action, raising the temperature to 72°F. Thus, the two degree difference on either side of the 70°F makes up the 4° of differential gap. Clear?

DERIVATIVE ACTION. Control operation in which the speed of a correction is made according to how fast a condition is going off-the-beam (same as *rate action*).

DIGITAL COMPUTER (*DIDJ-it-al*). A calculating machine which counts numbers (digits) rather than quantities as do the analog-style computers. Performs basic arithmetic at speeds in millionths of a second. It can remember the result of one calculation and employ it later to come up with a complete answer.

DISCRETE UNITS. Distinct or individual units. For example, automobile crank shafts or bathtubs would be discrete units as contrasted to petroleum or orange juice, which is produced in one continuous flow.

DYNAMIC BEHAVIOR. Describes how a control system or an individual unit carries on with respect to time.

E

END-POINT CONTROL. Simply — quality control through continuous, automatic analysis. In highly automatic operations, final product is analyzed; if there are any undesirable variations, the controller automatically brings about the necessary changes.

EQUILIBRIUM. For control systems, as for humans, this means balance.

ERROR. Not a mistake by an automatic controller but rather the margin by which it missed its target value.

F

FEEDBACK. Part of a closed loop system which brings back information about the condition under control for comparison to the target value.

FINAL CONTROL ELEMENT. Unit of a control system (such as a valve) which directly changes the amount of energy or fuel to the process.

FREQUENCY RESPONSE ANALYSIS. One of the most frequently misunderstood terms. Simply refers to a method of putting a control system through its paces. Does this by introducing a varying rhythmic change (like alternating current) into a process or control unit to see what effect, if any, these changes will have on the process or control unit. Since the information determines how a system or control unit will react, it is possible to use this method of analysis to predict what the addition of new equipment will mean to an operation.

G

GAIN. Amount of increase in a signal (or measurement) as it passes through a control system or a specific control element. If a signal gets smaller, it is said to be *attenuated*. To further complicate things, gain can also mean the sensitivity of a device to changes.

GRAPHIC PANEL. A master control panel which, pictorially and colorfully, traces the relationship of control equipment and the process operation. Permits an operator, at a glance, to check on the operation of a far-flung control system by noting dials, valves, scales, lights, etc. Widely used in chemical, petroleum, paper, and power plants.

H

HUNTING. Even control or measuring instruments sometimes have trouble finding the target. When an instrument wanders around the target without success, engineers appropriately claim it is "hunting".

HYSTERESIS (*hiss-ter-EE-siss*). The difference between the response of a unit or system to an increasing signal and the response to a decreasing signal.

I

INPUT. A sort of cable-ese meaning incoming signal to a control unit or system.

INSTRUMENT. As used industrially, definitely not a French horn or surgeon's forceps. Used broadly to con-

note a device incorporating measuring, recording, and/or controlling abilities.

INSTRUMENTATION. Used to describe the application of industrial instruments to a process or manufacturing operation. Also describes the instruments themselves.

INTEGRATOR (*IN-tuh-gray-ter*). A device which continuously adds up a quantity being measured over a period of time. Similar in use to your electric meter at home.

L

LAG. Preferred engineering term for delay in response.

LOAD. What the process calls for in fuel or energy input.

LOGGER. Not a woodsman but an instrument which automatically scans conditions (temperature, pressure, humidity) and records—or logs—findings on a chart. Can come equipped with lights or alarms to signal danger points.

M

MANIPULATED VARIABLE. A quantity—or a condition—which is altered by the automatic units to set off a change in the value of the chief condition under regulation.

MEASURING MEANS. Whatever is used to measure a condition. A thermometer is a measuring means for room temperatures.

MINIATURIZATION. Method of reducing the size of instruments to minimize the space requirements.

N

NEUTRAL ZONE. An automatic control engineer's version of No Man's Land—a range of values in which no control action occurs.

NOISE. Similar to radio static. Meaningless stray signals in a control system that do not require correction.

OFFSET. Describes the difference between the value or condition desired and that actually attained.

O

OPEN LOOP. A control system in which there is no self-correcting action for "misses" of the target value, as there is in a closed loop system. Might be likened to a hunter firing a rifle at a deer; the bullet goes where it's aimed, and if it misses the target, no deer!

OPTIMALIZATION (*op-timm-al-eye-say-shun*). The approach to economically perfect plant operation accomplished, primarily, by analytical rather than hit-or-miss methods.

OSCILLOGRAPH RECORDER. A device capable of charting high speed variations in measured quantities, such as temperature or pressure, as found in aircraft testing, for example.

OUTPUT. Outgoing signal of a control unit or operation.

OVERSHOOT. Occurs when the process exceeds the target value as operating conditions change.

P

PHASE SHIFT. A time difference between the input and output signal of a control unit or system.

POTENTIOMETER (*poh-TEN-she-AH-mitter*). Probably the most versatile of all measuring instruments. It comes in 36 million variations. It can measure anything from bubble gum mix to nuclear energy generation by comparing the difference between known and unknown electrical potentials.

PROGRAM CONTROL. A control system which automatically holds or changes its target value on the basis of time to follow a prescribed "program" for the process. Setting the timer and thermostat in your oven at home to bake a cake is a simple example of this type of control.

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SOCIETY FOR ADVANCEMENT OF MANAGEMENT

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PROCESS. Actually, the system under control. It does not include the automatic control equipment.

PROPORTIONAL BAND. The range of values of the condition being regulated which will cause the controller to operate over its full range. Usually expressed by engineers in terms of percentage of instrument full scale range.

PROPORTIONAL CONTROL. Control action related to the extent a condition being regulated is off-the-beam.

PYROMETER (*py-rah-mitter*). *Pyro* is the Greek word for fire, and meter, a device for measuring. Thus, a pyrometer is an instrument for taking the temperature of a process. Not confined to measuring high temperature.

R

RATE ACTION. A type of control action in which the rate of correction is made in proportion to how fast the condition has gone awry. Also called *derivative action.*

RESISTANCE. A characteristic of an industrial process which opposes flow, either fluid or electrical. A partially open faucet resists the full flow of water.

RESET ACTION. A type of control action in which the corrections are made in proportion to the length of time a condition has been off-the-beam and the amount of deviation.

RESET RATE. The number of corrections per minute made by the control system. Usually expressed as X number of repeats per minute.

REPRODUCIBILITY. Nothing at all to do with the spawning of new little robots. In instrument work it means the exactness with which measurement of a given value can be duplicated.

S

SCANNER. An instrument which automatically checks a number of measuring points and indicates which have wandered too far from their desired values.

SENSITIVITY. The degree of response of an instrument or control unit to a change in the incoming signal.

SERVOMECHANISM (*servo-MECH-anism*). A type of closed loop control

system in which mechanical *position* is the controlled variable. For example, an anti-aircraft gun positioning system is a servomechanism. This term often used incorrectly with reference to all types of automatic control systems.

SERVO TECHNIQUES. Methods devised by engineers to study performance of servomechanisms or control systems.

SET POINT. The target value which the automatic units strive to reach, or hold.

SIGNAL. Information relayed from one point in the control system to another.

SINUSOIDAL. (*sign-you-soy-dal*). An adjective used to describe a type of signal which varies with time. The electricity in your house is a common example of a sinusoidal variation. In the language of the automatic control engineer, this term is used to describe the type of input signal introduced into a control system to study its control characteristics (see FREQUENCY RESPONSE).

STATIC BEHAVIOR. Describes how a control system, or an individual unit, carries on under fixed conditions (as contrasted to dynamic behavior which refers to behavior under changing conditions).

STRAIN GAGE. A measuring element (transducer) which can be used to convert a force, pressure, tension, etc., into an electrical signal. The signal is then fed to an instrument for measurment and, if desired, control.

STEP CHANGE. Simply the change from one value to another in a single step.

SUPERVISORY CONTROL. A control system which furnishes intelligence, usually to a centralized location, to be used by an operator to supervise the control of a process or operation.

SYSTEM ENGINEERING. A method of engineering approach which takes into consideration all of the elements in the control system, down to the smallest valve, and the process itself. It is believed to have the most promise as an intelligent approach leading toward fuller industrial automation.

T

TELEMETERING (*tella-MEETering*). Transmission of a measurement over long distances, usually by electrical means. A receiving instrument converts the transmitted electrical signals into units of whatever is being measured.

THERMISTOR (*THERM-iss-tor*). A special type of temperature sensing element. Its extreme sensitivity permits it to transmit a strong signal from a very tiny temperature change.

THERMOCOUPLE. A temperature sensing element that creates an electrical signal in proportion to the temperature at the element.

TRANSDUCER. An element which converts one form of energy into another. Usually refers to an element creating a signal in relation to a condition being measured, like a thermocouple, or strain gage.

TRANSFER FUNCTION. Simply a mathematical expression of the control engineer which expresses the relationship between the outgoing and incoming signals of a process, or control element. Useful in studies of control problems.

TRANSISTOR. Tiny element in an electronic circuit that does much the same job as a vacuum tube. It is light, practically unbreakable, long-lived, and highly efficient.

TRANSIENT STATE. Generally implies a temporarily abnormal condition of a variable like speed, temperature, or pressure, which is changing erratically. Contrasted to this is "steady-state" which means that the variable is either held at a constant value, or else changes uniformly with time.

U

ULTRASONICS. A new term to describe a range of vibration frequencies well above that which can be heard by the human ear. No limit has yet been put on the upper limits. Vibrations in this range cause unusual and helpful phenomena. For example, the manner in which ultrasonic vibrations penetrate solids permits a new method of testing for internal flaws (also called "black sound").

V

VARIABLE. A factor or condition which can be measured, altered or controlled, i.e., temperature, pressure, flow, liquid level, humidity, weight, chemical composition, color, etc. END

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New Management Writing . . .

SELECTING AND DEVELOPING FIRST-LINE SUPERVISORS

By George D. Halsey, Published by Harper & Brothers. 203 pages. $3.50

APPLICABLE practical techniques for selecting and developing first-line supervisors constitute the main body of this fifteen chapter volume. Liberally illustrated with an even greater number of references to actual programs utilized by thirty-five cooperating diverse companies, the book narratively portrays the personnel devices these organizations use in the selection and development of first-line supervisors.

In some instances, the author develops instruments that are a composite of several different company approaches to a specific personnel tool. For example, the form designed for recommending nominees for supervisor-candidate courses.

There is an excellent chart on determining the degree of responsibility and authority a foreman has in the Armstrong Cork Company. This chart lets each supervisor know, individually, just what degree of authority he is permitted to use in the exercise of his job functions. Mr. Halsey's outline of some of the basic requirements for a successful active program for selection and development of first-line supervisors (Chapter II) is not only simply described, but pointed in its clarity for resolving some of the complex problems involved in this subject. Chapters IV, V and VI of the publication contain sound material information and tested techniques for the establishment of a formal supervisor-candidate induction program.

These three chapters embody the highlights of this edition and discuss not only the dangers of hasty selection of individuals for first-line supervisors, but in a constructive manner, summarize the methods recommended by the Training-Within-Industry Foundation and programs in current use by such nationally known firms as Aluminum Company of America, American Smelting and Refining Company, Carrier Corporation, General Electric Company, International Harvester Company, Radio Corporation of America, Standard Oil Company (Indiana) and the Vick Chemical Company. For example, the relationship of psychological testing devices to foremen-candidate courses (Chapter V) in determining a better selection of candidates for training is described in terms that business executives, regardless of their specialized training, can comprehend.

A typical manual for conference leaders of meetings of supervisors in training today is succinctly stated in Chapter VIII. The basic training program of induction for the Detroit Edison Company is outlined in detail in Chapter IX.

Although I was academically interested in the last part of the book (Chapters XI through XV), the impact of this latter information was not as impressive as that of the preceding sections of the text.

Mr. Halsey's objective of describing the most up-to-date methods and research techniques in the establishment of supervisor-candidate programs has been clearly met. His light-language approach to this important subject is to be commended. This book is enthusiastically recommended for busy vice presidents, plant managers and personnel directors who occasionally are victims of "brief-caseitis" in their extensive reading research for programs that will fit their "particular situation."

Lawrence G. Spicer
Director of Personnel
Kelvinator Division
American Motors Corporation

HOW TO BUILD PROFIT VALUE IN YOUR SALES DOLLARS

By John D. Corrigan. Published by The Ronald Press, 15 E. 26th St., New York City. 242 pps. $3.95

This is a fast-moving "how-to-do-it" book that analyzes the job of selling from a top-management viewpoint. It has down-to-earth material on selecting, training and motivating salesmen, and organizing the sales activity. The author takes a top-side look at marketing research, product policies and pricing policies to meet today's competition. Here is an excellent aid to better direction of the sales organization.

A POLICY FOR SKILLED MANPOWER

A Statement By The National Manpower Council with Facts and Issues Prepared By The Research Staff. Columbia University Press. 1954. 299 pps. $4.50.

The first evaluation of the central role this country's skilled workers and technicians play in our economy. Information not otherwise available was secured by a unique series of conferences throughout the country with representatives from business, labor, education, government and the armed services.

INDUSTRIAL MANAGEMENT— 5th Edition

By William R. Spriegel & Richard H. Lansburgh. Published by John Wiley & Sons, Inc., 440 Fourth Ave, New York 16. $6.75.

An extensive revision of a basic text in the field of management, this book neatly balances theory with practice. The reader is led through a careful analysis of management's problems in each business function preparatory to making decisions. The complex relationships between management and workers, customers, owners and the community are also examined in detail.

LABOR PRODUCTIVITY IN SOVIET AND AMERICAN INDUSTRY

By Walter Galenson. Published by Columbia University Press, 2960 Broadway, New York City, 27. 273 pp. Price $5.50.

A factual, searching analysis of output per man in mining, steel, shoe manufacturing, textiles and other Soviet industries. These data are evaluated and contrasted with comparable American statistics. Speculating on the future, the author sees America ahead of Russia even after twenty more years of prodigious Soviet effort in production.

MANAGERIAL STATISTICS

By Kermit O. Hanson. Published by Prentice-Hall, Inc., New York City. 306 pps. $6.35.

This is an introduction to elementary statistical techniques, with heavy emphasis on applications of statistics in business. The book has sections on sources of data of interest to business, the collecting of data by sampling, sales forecasting and using statistics for internal managerial control. This will be helpful to readers who have not had training in statistics. It will be a good refresher for readers who have not applied their knowledge of statistics.

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